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ABSTRACT

Seventy-four environmental education programs/projects, identified by program/project title and state, are described. The programs were selected for inclusion on the bases of geographic representation, across a spectrum of target audiences and funding sources. Although the descriptions differ in format, they include one or more of the following: (1) background/history; (2) goals/objectives; (3) instructional and/or curriculum materials produced; (4) source(s) of funding; (5) implementation procedures; (6) program activities, such as publications, in-service teacher education, operating environmental education center, and others; and (7) comments on evaluation and future endeavors. Examples of programs include: A Conceptually Organized Program for Environmental Education (Alabama), Sierra Club (California), Youth Conservation Corps (District of Columbia), Marine Social Studies (Hawaii), Conservation Education Center (Iowa), ERIC/SMEAC (Ohio), Energy and Man's Environment, Inc. (Oregon), Seminar of Water Quality (Texas), Wildlife Essay Contest (Virginia), and Studies of Environmental Action (Washington). (Author/JN)

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A "Sampler" of Environmental Education Activities and Programs in the United States of America

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Note: These samples were compiled from materials submitted by members of the FICE Subcommittee on Environmental Education, and from entries in A Directory of Projects and Programs in Environmental Education, 4th edition, published in December 1976 by the ERIC Information Analysis Center for Science, Mathematics, and Environmental Education of the National Institute of Education. Programs were selected for inclusion on the bases of geographic representation, across a spectrum of target audiences and funding sources.

Alabama	Mobile	A Conceptually Organized Program for Environmental Education
Alabama	Montgomery	Alabama Environmental Quality Assn.
Arizona	Prescott	Community Nature Center
Arkansas	Little Rock	Arkansas Ecology Center
California	Los Angeles	Inner-City Environmental Education Project
California	Oakland	East Bay Regional Park District
California	Pleasant Hill	Project Marine Ecology Research
California	San Francisco	Sierra Club
Colorado	Boulder	Thorne Ecological Institute
Colorado	Boulder	Energy and Society (BSCS)
Colorado	Boulder	The Energy Sources - A New Beginning
Colorado	Denver	Keep Colorado Beautiful
Connecticut	New Haven	Environmental Education Center
District of Columbia	Washington	National Science Foundation
District of Columbia	Washington	Forest Service, USDA
District of Columbia	Washington	Soil Conservation Service, USDA
District of Columbia	Washington	Youth Conservation Corps
District of Columbia	Washington	Alliance for Environmental Education
District of Columbia	Washington	Population Education Project, ZPG
District of Columbia	Washington	National Wildlife Federation
District of Columbia	Washington	Project Learning Tree, AFI
District of Columbia	Washington	The Wilderness Society

Florida	Jensen Beach	Curriculum Modification Through Environmental Studies
Florida	Tallahassee	Environmental Education in Florida Schools
Florida	Tallahassee	Community Leaders' Training in Environmental Studies
Georgia	Athens	Environmental Education for the Secondary School
Georgia	Atlanta	Students Toward Environmental Participation (STEP)
Georgia	Pine Mountain	Callaway Gardens
Hawaii	Honolulu	Marine Social Studies
Hawaii	Honolulu	Waikiki Aquarium
Idaho	Boise	Idaho Conservation League
Illinois	Springfield	Economic, Environmental and Social Impacts of Natural Gas Shortages
Indiana	Indianapolis	PRIDE
Indiana	Terre Haute	Multiple Environmental Literacy Project
Iowa	Ames	Project ECO
Iowa	Guthrie Center	Conservation Education Center
Kentucky	Morehead	Environmental Information Dissemination
Maine	Falmouth	Environmental Energy Education Project, Maine Audubon Society
Maryland	Dickerson	Sugarloaf Regional Trails
Maryland	Edgewater	Rhode River Education Project
Maryland	McHenry	Environmental Education Land Use Projec
Massachusetts	Lincoln	Hatheway Environmental Education Institute
Michigan	Allendale	Mill Creek Basin Study
Michigan	East Lansing	National Association for Environmental Education
Michigan	Mount Clemens	Discovery Through Outdoor Education

Minnesota	Minneapolis	Environmental Conservation Laboratory of Minnesota (ECOL)
Mississippi	New Albany	Three Rivers Educational Cooperative
Missouri	St. Louis	Environmental Education Training Project
Montana	Billings	Cooperative Environmental Education Program
New Hampshire	Holderness	Squam Lake Science Center, Inc.
New Jersey	Branchville	New Jersey School of Conservation
New Jersey	New Brunswick	International Environmental Studies
New York	New York	Project CUE (National Urban League)
North Dakota	Minot	Burlington Dam Debate
Ohio	Cincinnati	Cincinnati Institute, Hillside Program
Ohio	Columbus	Information Reference Center (SMEAC)
Ohio	Columbus	School of Natural Resources
Oklahoma	Edmond	Environmental Economic Literacy and Materials Development Institute
Oregon	Portland	Western Regional Environmental Education Council
Oregon	Portland	Energy and Man's Environment, Inc.
Oregon	Portland	Recycling Information Office
Pennsylvania	Pittsburgh	Energy: A Technological, Economic, and Moral Crisis
Pennsylvania	Ridgway	Environmental Management Program
South Carolina	Charleston	Oceanographic Sciences Conceptual Schemes Project
South Dakota	Watertown	Environmental Education Workshops
Tennessee	Norris	Tennessee Valley Authority
Texas	Austin	Cityscape: A City and Its River
Texas	Austin	Seminar on Water Quality

Virgin Islands	Cruz Bay	Department of Conservation and Cultural Affairs, Environmental Studies Program
Virginia	Arlington	The American Land Trust
Virginia	Dayton	Wildlife Essay Contest
Washington	Ellensburg	Studies of Environmental Action
Wisconsin	Green Bay	Project I-C-E
Wisconsin	Wausau	School Forest Camp

PROJECT COPEE - A CONCEPTUALLY ORGANIZED PROGRAM FOR ENVIRONMENTAL EDUCATION

Dr. Michael A. Magnoli, Project Director; Mobile County Public School System, P.O. Box 1327, Mobile, Alabama 36601; (205)438-6011, Ext. 460.

Special Facilities:

A 640-acre Environmental Studies Center with four miles of nature trails complete with trail markers and species labels, a 20-acre lake, an amphitheatre, and restroom facilities with water fountains.

The staff includes one director, three professional staff members, one secretary and one clerk.

Project History:

1. Principal Originators: Staff members, administrators, and teachers of the Mobile County Public School System who were selected as part of an environmental education curriculum standing committee. This committee was assigned the task of defining the nature, scope and general direction of a comprehensive environmental education program and considering possible funding sources.

2. Date and place of initiation: July 1974, Barton Academy, Mobile, Alabama.

3. Overall project purpose: To develop a process by which students could be exposed to the types of factual and unbiased information that they would need to become "environmentally literate citizens" capable of making wise decisions. A K-12 curriculum guide composed of developed activities for implementation and integration into the existing curriculum will be the final product.

Project Objectives:

1. During the project period, teachers, students, school administrators, and community resource people will design and construct multidisciplinary K-12 environmental education guides which will be based on a schematic of concepts.

2. During the project period the environmental education staff will develop and publish a process model for implementing environmental education programs into existing school curriculum.

Materials:

1. Materials produced: K-5, 6-8, 9-12 environmental education activities are being piloted and evaluated by teachers and students. Presently the pilot program is approximately 90% complete and is being modified for inclusion in the proposed curriculum guide.

2. Free materials available: Project description; environmental education resource topics list; a Guide to Campus Improvement and Beautification; a Composite of Energy Curriculum Guides and Enrichment Materials; an Environmental Education Concept Inventory; Environmental Education Activities produced from 354 concepts; suggested activities in environmental education for grades K-5, 6-8, and 9-12; a list of sources for environmental education materials; a suggested reading list for environmental education program developers; and an information sheet identifying the recycling outlets accessible to Mobile County residents.

3. Materials produced that can be purchased: None.

4. New instructional materials being developed: Curriculum guides for grades K-12, Field Trip Plans for grades 1, 3, 5, and 7.

5. Additional materials being developed: Slide presentation entitled "Environmental Education in the Mobile County Public Schools."

Materials Implementation:

1. 62,182 students have participated in the environmental education program. These students are enrolled in 83 schools with approximately 2,900 teachers. Names and locations of schools where the program materials are being used can be obtained from the Mobile County Public Schools, Mobile, Alabama 36601.

2. The materials are also being used in the Galax Virginia School System, Galax, Virginia and the Catholic Diocese of Mobile.

Teacher Preparation:

Two-week summer workshop for teachers in Mobile County, environmental education presentation for faculty groups by environmental education staff, three phase workshop for Galax, Virginia schools conducted by the Director of Environmental Education.

Materials Evaluation:

1. Has the effectiveness of the materials been evaluated: Yes. State Review Team, classroom teachers, administrators and students.

2. Pertinent published research studies: A variety of presentations and papers prepared by individual staff members.

Project Summary:

During the past year, the local system committed itself to the construction and development of the ESC by appropriating $250,000 to provide a physical facility on 640 acres of school board property. This center will provide a location, as well as a permanent staff to provide support assistance for the continuation of all the environmentally related activities presently under the supervision of the project. Due to the nature of the process model and the multidisciplinary aspects of the curriculum materials developed, environmental education will continue in Mobile County after federal funding has ceased. If, indeed, the answer to our present and anticipated environmental problems is better education, then the Mobile County Public School System is moving on a variety of fronts to provide students with the types of information necessary to become environmentally literate citizens, and to provide them with the motivation necessary to become actively involved in solving these problems. The projected completion of the curriculum guide at the end of the project year will hopefully provide the necessary mechanism for integration of environmental education concepts and activities into all subject areas and all grade levels K-12.

Plans for the Future:

1. Produce curriculum guides for grades K-12.
2. Participate on Environmental Education Advisory Councils with the Alabama State Department of Education, higher education institutions, etc.
3. Participate in planning school or community environmental action projects such as recycling centers, car pooling programs, campus beautification projects, etc.
4. Prepare environmental education legislation and State Department of Education courses of study.
5. Design specific environmental education programs for pre-service and in-service teacher education at the elementary, secondary and higher education levels.
6. Prepare field trip lesson plans for all grade levels.
7. Design specific environmental education learning activities, research projects, etc., for students, teachers and citizens.
8. Develop communications and cooperative working relationships with educational institutions, organizations, and groups concerned with environmental education both internal and external to Mobile County.
9. Develop curriculum guides, audio-visual aids, and exhibits for facilitating environmental education, when such entities are not available on the commercial market.

---Michael A. Magnoli
October 1976

ALABAMA ENVIRONMENTAL QUALITY ASSOCIATION

2108 E. South Blvd., P.O. Box 11,000, Montgomery, Alabama 36111;
(205)281-6474.

Executive Vice President: Martha McInnis; Communications Specialist: Nancy Callahan; Field Service Coordinator: J. Frank Filgo; Executive Secretary: Mrs. Pat Thompson.

The Alabama Environmental Quality Association is a private, non-profit public service and environmental education organization with a mission to create an environmentally-literate citizenry among Alabama's people and to spark individual action and initiative in creating a higher quality of life. The Association embraces the philosophy that the people, when given sound, factual information, are the ones who should determine the kind of environment and way of life that should be developed and passed on to generations of the future.

The Alabama Environmental Quality Association has had an impact on thousands of Alabamians through a myriad of service endeavors. Among AEQA's host of environmental education publications are a monthly newsletter, EnvironNews, available by subscription for $2 per year; Recycling: Alabama Style, a 52-page booklet describing the manner in which a community recycling program should be organized (available for $1 per copy); and Your Little Corner of the World ($1.50 per copy), a Bicentennial pamphlet listing 200 steps citizens can take to improve the environment.

The Association operates an environmental film library and a speakers bureau, and frequently sponsors environmental education seminars in various Alabama cities (topics have ranged from "The Control and Disposal of Hazardous Waste," to "Pesticides and Your Environment," to "Alabama Surface Mining Legislation"). AEQA coordinates a clearinghouse service through which citizens receive help on specific environmental problems. It is spearheading an eight-state movement to develop the 200-year-old route of William Bartram, the first naturalist-artist of the American Colonies, as a National Scenic Trail through the Southeast, and was instrumental in 1976 organizing the official Bartram Trail Conference.

The Association annually sponsors the Governor's Environmental Quality Awards Program, thereby giving statewide recognition to those who make outstanding contributions to the quality of life in Alabama.

AEQA has recently initiated a membership structure to enable a wide spectrum of society to become directly involved in this unique, community-wide movement. For information, contact Mrs. Carolyn K. Dunlavy, Membership Director.

---Nancy Callahan
October 1976

COMMUNITY NATURE CENTER, PRESCOTT UNIFIED SCHOOL DISTRICT #1

Dr. Henry Dahlberg, Project Director, P.O. Box 1231, Prescott, Arizona 86301; (602)445-5400 Ext. 215.

The Community Nature Center was conceived by Dr. Kenneth Walker, Superintendent of Prescott Unified School District #1 and developed by Dr. Henry Dahlberg, the project director, with funds from the Elementary and Secondary Education Act Title III. The project began in August 1974. There are two full-time staff members, the director and a secretary.

The project is located within the Prescott city limits. The site is archetypal pinyon-juniper type with additional representives from the chaeparral and grassland communities. A portion of the site has rugged terrain with granite outcroppings. Plant succession is illustrated by an abandoned field. There is also an abandoned wagon road used in the middle 1800's. Over 185 plant species have now been identified on the site, over 50 species of birds, 15 reptiles and numerous mammals. The addition of a pond has added to the diverse speciation of the site with riparian plants. The site has a log cabin, school garden, over one mile of self-guiding nature trails, and an amphitheatre seating 80 people. A preservation area of some seven acres has been set aside. The Center is open to the public during the summer months from 7-3 Tuesday through Saturday and during the winter months from 8:30-11:00 Monday through Friday.

Project Objectives:

The Community Nature Center offers numerous programs for a wide range of audiences. Curriculum has been developed for elementary school children and is in the process of being developed for the secondary level. Research is conducted by the local college and many college classes use the Center to facilitate their classroom work. Three guides and one dichotomous key have been developed for use by the general public at the Community Nature Center. Programs combining conservation work experience and nature study are offered for youth groups such as the Boy Scouts. An environmental living program is being developed using the student built log cabin and the school garden. The Center has also been used for five three-hour credit graduate classes in environmental education taught by Arizona State University. The Center is open to students from schools throughout the state and has had visitors from many other states.

Curriculum and Visitors Materials Produced:

A teachers guide (K-6) has been developed and a secondary guide is in draft form. These guides incorporate the vast amount of environmental and outdoor education materials produced by projects throughout the United States. Also being developed is a short key to the common butterflies, reptiles and birds found at the Center. In final form is a Woodland Trail Guide which is a 32-page illustrated guide to the Community Nature Center. It is also available in Spanish. A Grassland Trail Guide for the wheelchair path has also been printed. Available in final form is a Dichotomous Key to over 90 of the common plants found in the pinyon-juniper life zone. A Plant Walk Guide deals with the ethnobotanical uses of 41 plants common to the pinyon-juniper life zone. A brochure of the Community Nature Center and a Curriculum and Visitors Materials Price List are available at no cost. The other materials described are available at our cost. The Community Nature Center sponsors several programs in teacher training and continuing education for adults in the community and at this time one-half of the teachers in the district have completed at least one three-hour credit course in environmental and outdoor education offered by Arizona State University. Over one-half of the teachers have completed the In-Service Day Workshop in the use of the Community Nature Center and other outdoor resources for outdoor and environmental education. Five different Community College classes used the Nature Center as a resource for their programs.

Project Evaluation:

The project is currently being evaluated as part of the final year of ESEA Title III funding. Evaluation results will not be available until Fall 1977.

---Henry Dahlberg
October 1976

ARKANSAS ECOLOGY CENTER

Tom Foti, Director; 1919 West 7th Street, Little Rock, Arkansas.
72202; (501)374-6271.

The Ecology Center has been awarded an $18,000 grant from the Department of Health, Education and Welfare for the purpose of developing a lesson plan and resource materials package for the public schools. The subject is the Natural Divisions of Arkansas, an approach to the study of Arkansas geography which also attempts to teach how natural systems function and especially how people relate to the rest of the natural system. This approach was developed by Tom Foti of the Ecology Center and has been widely praised throughout Arkansas.

The grant was awarded under the Environmental Education Act by the Environmental Education Office of the U.S. Office of Education, DHEW, and is being undertaken in cooperation with the Environmental and Conservation Education Program of the Arkansas Department of Education. Bill Fulton, Environmental Education Specialist of the Department will work on the project, and the Department will provide secretarial support.

The grant will extend one year beginning July 1, 1976. During the year a book will be produced on the Natural Divisions, a teacher's guide, a slide show and "hands-on" materials for students' use.

The materials will be developed into a one-day to two-week module to be varied to suit the needs of the individual class and used as part of full-year courses in Social Studies, Arkansas History, Biological Science, Earth Science and other courses. Since the materials will be prepared for the teacher, it will be flexible as to course and grade level and therefore will be tried in as many courses as possible and at grade levels from 4-12 or even college. There has been interest in adapting some of the materials for use by lower grades.

The following school districts have expressed an interest in participating: Little Rock, Ft. Smith, Bryant, Stuttgart, Monticello, Lake Hamilton (Hot Springs) and Fayetteville, with more possible. A very special part of the project will be headed by Scotta Sheets, a Social Studies teacher at Mills High School in Pulaski County, who will team-teach a full-year natural divisions course.

In the past the Arkansas Ecology Center has carried on a three-year land use study of eastern Arkansas funded by the Ford Foundation, and has conducted three EPA Clean Water workshops and distributed a follow-up newsletter on clean water.

---Tom Foti
September 1976

UCLA/LOS ANGELES INNER-CITY ENVIRONMENTAL EDUCATION PROJECT

Dr. Mark Lipschutz, Project Director, Office of Experimental Educational Programs, 405 Hilgard Avenue, Los Angeles, California 90024.

This project addresses the often neglected environmental educational needs of low income and inner-city communities by linking the high schools of these communities with the resources of the university. Its approach is to train high school teachers as qualified environmental educators. Once trained, the teachers, aided by UCLA undergraduate volunteers, will conduct mini-courses in their own schools. As a component of the mini-courses, teachers will help their pupils create locally-oriented environmental education projects which will be presented to the neighboring community, thus bringing environmental education from the university to the inner city.

The project will be implemented in cooperation with the Los Angeles Unified School District and other school districts in Los Angeles County.

Stage I: (Summer, 1977) A community advisory board will be formed to review proposed actions of the project staff. The board will meet regularly during the project year. Twenty high school teachers and forty UCLA upper division undergraduates will be trained as environmental educators. The teachers will be chosen from schools in lower-income communities. The students will be highly motivated individuals who have already completed coursework in environmental studies. A six-week summer institute will be conducted at UCLA to educate the teachers and students, using a multidisciplinary approach drawing from the Department of Geography, the School of Architecture and Urban Planning, the School of Public Health, and the Creative Problem Solving Program. The institute format will include lectures, group discussions, field trips, and invited speakers oriented around selected environmental themes. During the last week of the institute, members will complete design of a high school environmental mini-course curriculum, to include workbooks and other resource material which will be implemented in the subsequent stage. The teachers and students will be awarded credit through UCLA summer school.

Stage II: (September 1977 - January 1978) Two UCLA students will have been assigned to each participant high school teacher, to work as teaching assistants in implementing the mini-courses. During the fall high school semester, these teams will teach environmental mini-courses based on the themes introduced at the summer insitute, and resource materials developed there. Special emphasis will be given to those themes which relate to the specific environmental problems of the individual communities. The high school students will also be asked to contemplate local environmental education projects, to be implemented in the community during the final stage.

The UCLA students will continue to pursue interdisciplinary environmental studies through existing university curricula.

Stage III: (February - June 1978) Community education projects designed in fall semester will be implemented by high school students supervised by the trained environmental educators. These projects, in the form of presentations, will be delivered to the entire high school, to elementary schools, and to local community groups such as churches, scout troops, and social action groups. High school students will participate in supervised group discussion of their work, and keep a general log of their experiences.

Toward the end of Stage III the staff will undertake an evaluation of the Environmental Education Program drawing on established assessment instruments or models to the extent possible.

The principal investigators will complete documentation of the year's activities to facilitate replication of the program in other communities. Evaluators and participating faculty will make recommendations on how to institutionalize the program at UCLA and participating schools.

Principal Investigators:

Dr. Christopher Salter
Geography Department
UCLA Bunche Hall

Dr. Jane Permaul, Dean
Experimental Educational Programs
394 Kinsey UCLA

Dr. Harry Silberman
Graduate School of Education
Moore Hall UCLA

Project Director:
Dr. Mark Lipschutz
Experimental Educational Programs
394 Kinsey UCLA

Assistant to the Director:
Diann Reingold
Experimental Educational Programs
394 Kinsey Hall UCLA

---Mark Lipschutz
September 1976

EAST BAY REGIONAL PARK DISTRICT

Richard C. Trudeau, General Manager, East Bay Regional Park District,
11500 Skyline Boulevard, Oakland, California 94619, (415)531-9300.

The overall purpose of the Department of Parks and Interpretation is to reach our general public on a regional basis. We are both a recreational and teaching park district set in two counties surrounded by cities and townships; hence, our designation as a Regional Park District.

Our specific objectives have been to staff, as best we can, along with our land acquisitions. We have gone from 8500 acres to 42,000 acres, with the main thrust of the acquisitions done under our general manager, Richard Trudeau. Our target audiences have been as broad a catholic spectrum as we could make, from 600,000 grade school and high school, etc. students coming to interpretive programs, to programs for hospital and convalescent homes; work in the area of urban education in such things as gutter walks and supermarket walks; work with environmental engineers; working with state highway engineers, toll bridge authority engineers in training for environmental impact writing.

We have now stated a new policy of dropping admission fees for schools and various other functions. A new emphasis is also that the District is being oriented both physically and psychologically for service to that significant segment of the population known as "the handicapped."

We are also working with the various transit authorities to provide entry into the parks on the part of the individuals and families who do not have transportation, for we are trying to fulfill former Secretary of the Interior Stewart L. Udall's statement, "I would cite the East Bay Regional Park District as one of the finest inter-county park systems in the nation."

Our $500,000 Environmental Education Building is now in full swing. We are in the process of organizing various methods of budgeting and planning so that we may become even more efficient. We plan to double our land holdings, and we hope to keep that quality of communication and services which is somehow symbolized by a staff naturalist of ours, David Lewton, who communicates readily in sign language about the beauties and wonders of the East Bay Regional Parks.

We have been teaching our interpretive methodology in various state, county and national parks so that we may all share what we practice here at the East Bay Regional Park District.

---Josh Barkin
Interpretive Specialist
October 1976

PROJECT MER

Dr. Donald Lundstrom, Director; Director of Curriculum, Alameda County Superintendent of Schools Office, 685 A Street, Hayward, California 94541; (415)881-6196

Bob Watanabe, Associate Director; Coordinator, Social Sciences, Mathematics, Science and Environmental Education, Contra Costa County Superintendent of Schools Office, 75 Santa Barbara Road, Pleasant Hill, California 94523; (415)944-3383.

Address all correspondence to: Marge Matovich, Executive Secretary, Project MER, 75 Santa Barbara Road, Pleasant Hill, California 94523; (415)944-3413.

Project MER (Marine Ecology Research), operated jointly by the Alameda and Contra Costa County Superintendents of Schools Offices, with support from the Diocese of Oakland, provides the Bay Area students with an opportunity to study marine ecology as part of their school curriculum and to participate in a series of ongoing scientific research studies of the San Francisco Bay-Delta-Estuary complex.

Involved are senior high students, mostly enrolled in biology classes. They spend six to eight weeks utilizing the MER curriculum materials. The Guide to Marine Ecology Research, a comprehensive unit including selected readings on estuarine ecology with emphasis on the local region and integrated laboratory investigations, was written by local teachers. The students spend two four-hour sessions at the Point Molate Marine Laboratory located in Richmond. During the first session, the students study the techniques used to measure the physico-chemical parameters of Bay waters and learn methods for studying the biological parameters. The second session involves students as researchers. At the lab, they participate in ongoing research problems. Present investigations include migration studies of pelagic fish, population surveys of dominant invertebrates, fluctuations in populations on varying substrates, etc.

Following training, students operate established field Monitoring Sites around the Bay where they monitor the waters for the physico-chemical and biological parameters. Data collected is reviewed by the MER staff for validity and entered in the county computer for analysis.

A special program is offered for junior high school students at the P.M.M.L. The materials developed by local teachers are especially designed for this age group. A resource guide for these teachers is under development. A laboratory site is presently being developed at Encinal High School, Alameda, for both the senior and junior high levels.

Project MER is supported by funding from the Alameda and Contra Costa County Superintendents of Schools Offices. The two County Offices and the Oakland Diocese, Department of Education have also covered indirect operation and publication costs. Participating schools provide supplies, transportation and substitutes. The 12th Naval District makes the P.M.M.L. space available at a minimal lease cost.

The Alameda Unified School District is providing laboratory space and other services for the Encinal High School site.

Standard Oil Company has donated funds, supplies and equipment. Additional funding for instructional supplies, equipment and miscellaneous expenses is also being sought from industry and government.

Project MER was initially supported by funds from the Contra Costa County Board of Supervisors through their California Fish and Game Fine Fund. This was followed by a grant from the Rosenberg Foundation. In 1971-72, a National Science Foundation grant funded the project. An ESEA Title III grant provided continued support for three additional years.

Publications:

Handbooks

The Handbooks were designed for use by students, grades 9-14, studying the ecology of the San Francisco Bay-Delta-Estuary Complex. Although Part I was designed for marine and brackish waters, some of the solutions could be modified to use in any kind of program involving testing for water quality. While the keys (Parts II-VI) are specific to this area, they will demonstrate how local teachers can devise practical keys to organisms in their area.

Part I	Monitoring Techniques for the Measurement of Physico- and Biological Parameters	$1.00
Part II	Key to the Phytoplankton Phyla and Genera	.60
Part III	Key to the Invertebrates	.80
Part IV	Key to the Coastal Marine Fishes of California	.50
Part V	Key to the Freshwater and Anadromous Fishes of California	.50
Part VI	Key to the Common Fishes of San Francisco Bay	.50
		$3.90
	Complete Set	3.50

Guides

The Guide was designed as a six to eight week unit to supplement the traditional tenth grade biology programs. The materials in the Guide include readings and laboratory activities and were prepared by teachers in Alameda and Contra Costa Counties.

Guide to Marine Ecology Research, revised	$2.50
Teachers' Supplement for the Guide to Marine Ecology Research	2.50
	$5.00
Complete Set	4.75

Publications are available from: Contra Costa County Superintendent of Schools Office, Educational Media Services, Attn: Walt Harris, 2371 Stanwell Drive, Concord, California 94520. Make checks payable to: County Treasurer and Tax Collector.

---Marge Matovich
October 1976

Sierra Club Programs in the Area of Environmental Education and Training

A Dissemination of Information

Sierra Club Books Program

The Sierra Club publishes books on topics such as toxic substances, alternative technology, energy conservation, citizen action and natural areas.

Publication of Reprints on Conservation Issues

The Club provides students and interested citizens with information on a wide range of issues. Reprints from Sierra Club Bulletin articles and special fact sheets are available from Sierra Club Information Services. In 1976, 24,000 persons, 7179 of them students requested and received environmental information from the Sierra Club by mail.

Publication of "Somebody Do Something"

This newsletter for children 10 years or older is published six times a year. It covers a host of subjects from wildlife preservation to national and international conservation issues such as tropical forests, water systems and Alaska.

Publication of "Teachers Packet of Environmental Education Materials"

Contains booklets on teaching methods such as "How to Teach Wilderness Conservation"; brochures on environmental problems and how to get involved in solving them; and resource sheets for books, films, posters, and other materials.

Sierra Club Film Library

This collection of award-winning conservation films is geared for audiences from grade school through adults. In 1976, over 600,000 persons, 70% of them children in classrooms, saw Sierra Club films in direct showings. In addition, there were 500 telecasts of these films on educational and commercial television.

Public Service Advertisements

Sierra Club public service advertisements appear in magazines and on television and radio, educating a mass audience on environmental issues of concern. For example, in 1976, 100 television stations and 500 radio stations broadcast Sierra Club public service spot announcements on energy conservation. Magazines with a combined circulation of 6,000,000 used Club public service ads.

Publication of "International Report"

This newsletter provides current information on international environment issues and United Nations activities such as the UN Environment Programme and international conferences.

B. Education

Sierra Club Internship Program

The Sierra Club has an active internship program for university and graduate students. On the national level students do research on a variety of issues and learn environmental advocacy techniques. The Club's International Program provides students who are interested in international affairs and the environment with an opportunity to learn about UN environment activities.

C. Field Projects

Sierra Club Service Trips

The Sierra Club provides the opportunity for approximately 400 young people a year to work with the US Forest and Park Service personnel to maintain nature trails and conduct research projects.

THORNE ECOLOGICAL INSTITUTE

Joan E. Martin, Director of Education, Thorne Ecological Institute,
2336 Pearl Street, Boulder, Colorado 80302; (303)443-7325.

Thorne Ecological Institute is a private, non-profit, non-endowed organization founded in 1954 to encourage ecological research and to serve as a catalyst in environmental problem solving. Thorne seeks to advance man's understanding of emerging problems by applying ecological principles and concepts, showing the nature of alternative approaches and solutions, and recognizing the role of individual values and responsibility. The current areas of emphasis include:

- -developing and implementing decision-making processes which integrate different disciplines and concerns
- -identifying and analyzing emerging issues in a changing society
- -designing and testing future approaches as considerations become more complex and long-range-oriented
- -developing and evaluating professional and management techniques and communicating them to others

This is accomplished through institutes, seminars, workshops, training programs, research, environmental planning, impact assessment, biophysical and socioeconomic inventories, management consulting and publication. The above are funded by grants, contributions, fees, and contracts, all for a specific project rather than in large unspecified amounts.

Thorne targets the majority of its educational programs for adults. This is not only because of the level of environmental problem solving analysis undertaken, but also because relatively few environmental educators concentrate on the adult population, those who are currently making decisions and policies. In all programs, Thorne works to provide alternatives to existing and institutionalized approaches. This includes educational approaches. Since educating adults requires more than the factual exchange prevalent at large conferences, professional meetings where papers are given, and luncheons with guest speakers, Thorne is currently developing and improving upon techniques for affecting change in adults.

In the summer of 1965, Thorne designed and implemented the National Seminar on Environmental Arts and Sciences (SEAS). The purpose of SEAS was to offer a unique approach to environmental problems by developing an understanding of the concepts and principles of ecology among the nations' top decision makers. Participant response has led this seminar to continue annually in Aspen with different themes and emphasis as the concerns and issues change. This seminar has provided the basis for an increasing number of adult education programs.

While SEAS provides an overview of the art and science of ecology, other seminars and workshops concentrate on more specific issues, specific impacts, and specific problems. They include:

SEAS Workshops: These workshops are offered for decision-makers who already have an understanding of ecological principles and who want to apply them to topics such as corporate responsibility, law, or the economy.

Resource Development Impact Seminars: These seminars focus on exploring impacts, developing a better understanding of impacts, and applying new perspectives and solutions to participants' problems. The seminar revolves around the impact of such resource development as timber management, increased mining operations, or recreational development in rural environments. Participants include anyone facing, dealing with, or acting upon these impacts.

Corporate Seminars: Thorne sponsors seminars to meet specific corporation needs. The seminar may be similar to any of the above seminars or it may be specially designed. Seminars have been conducted for companies such as Public Service Company of Colorado and AMAX Inc.

Local Problem Solving Workshops: While most of Thorne's programs are designed to have national or regional significance, these programs are designed for facilitating in local problem solving. They provide a medium for individuals to analyze their problems and to arrive at possible solutions. These local problems include such topics as the trade-off between economic and environmental problems, conflict between city and county policy, and lack of land use planning.

In addition to the seminar/workshop format, Thorne offers longer ongoing institutes. In 1963 Thorne began the Rocky Mountain National Park Environmental Seminars to provide a series of week-long courses on ecology to the general public. In the spring Thorne will offer a series of courses on the present state of the art of environmental impact assessment.

Although all education programs have some "experiential" aspect, Thorne also offers programs which emphasize the experiential. They include a skiing workshop, a rafting trip down the Green River, and a wilderness outing.

Thorne's educational programs have not just been limited to adults. For sixteen years, Thorne sponsored the Boulder Natural Science School, an outdoor nature study program for children in Boulder, Colorado. Thorne also has offered a series of week-long environmental education programs for junior high school students in Rocky Mountain National Park called "Eco-Explorations." In addition, under contract with the Federal government, Thorne continues to operate Youth Conservation Corps camps in Rocky Mountain, Glacier, Kings Canyon-Sequoia, and Yosemite National Parks.

---Joan E. Martin
October 1976

ENERGY AND SOCIETY: INVESTIGATIONS IN DECISION MAKING

Biological Sciences Curriculum Study, P.O. Box 930, Boulder, Colorado 80302; (303)666-6558.

Energy and Society: Investigations in Decision Making is designed as a nine-week instructional unit for high school, college, and adult students. During the course of the unit, students discuss certain basic physical laws related to energy, explore some of the possible consequences of energy decisions, and formulate an energy-related question that they then investigate. In the context of each student's question, seven categories of factors affecting energy decisions are considered. These categories are politics, economics, technology, attitudes, health and safety, environmental impact, and physical laws. Through consideration of empirical data and through examination of personal and community values, students attempt to arrive at an energy "recommendation" for their community. The issue is finally carried one step further, to the consideration of national and world energy futures.

The project was funded by the U.S. Office of Education. Materials include Student's Handbook, Teacher's Guide, a set of daylight slides, a film loop, a card set, and The Energy Management Game. The program will be available in Spring 1977, from Hubbard Scientific Company.

(November 1976)

THE ENERGY SOURCES - A NEW BEGINNING

Elwood E. Miller, Associate Director, Educational Media Center, University of Colorado, Boulder, Colorado 80309; (303)492-7341.

"The Energy Sources - A New Beginning project is currently in its second phase, under funding from the U. S. Office of Education. The first project was designed primarily to produce materials about alternative energy sources. A second grant, currently in operation, was funded to design utilization patterns and models for the information developed for the first grant.

The materials developed consisted primarily of two separate sets. One is a set of 16mm motion picture films, each 28 minutes in length under the general title for the series of "Energy Sources - A New Beginning" and includes nine separate films titled: Energy Sources, A Matter of Policy; Geothermal Power - The Great Furnace; The Sleeping Giant - Coal; Solar Power - The Giver of Life; Wind Power - The Great Revival; Oil Shale - The Rock that Burns; Tar Sands - Future Fuel; Nuclear Gas Stimulation - Tapping our Natural Heritage; and Nuclear Energy - The Great Controversy.

The ninth film "Nuclear Energy - The Great Controversy" is being reproduced with an additional grant and with some suggestions from the U. S. Office of Education. That film will be available about the first of January, 1977.

Also produced under the initial grant were a set of study guides for each of the nine films plus a teachers guide for the entire series. These materials are available from the University of Colorado at Boulder--both films and the teaching guides.

Produced during this same effort but not under the contract of the U. S. Office of Education is a set of sound filmstrips covering the same content but aimed at the junior high school science level as contrasted with the films themselves which are adult education and high school films. All of these materials are now available from the Educational Media Center at the University of Colorado.

All of the film materials were validated with high school science classes before final production of each film (or filmstrip) and are now in use in a series of adult education seminars as well as high school classes in the State of Colorado. Our future plans include an effort for national dissemination of these materials during the 1977-78 academic school year. An additional proposal is being prepared by this office currently to insure national distribution.

---Elwood E. Miller
September 1976

KEEP COLORADO BEAUTIFUL

Mrs. Beverly Fleming, Executive Director, Keep Colorado Beautiful Inc., 4260 East Evans Avenue, Denver, Colorado 80222; (303)757-2272.

Purpose: To coordinate efforts state-wide in a broad educational program in the areas of litter prevention, solid waste problems, conservation of natural resources, and beautification.

Audience: All public and parochial schools in Colorado, service organizations and other groups, clubs, churches, government agencies, businesses, individuals.

Recent Projects: '76 Litter Revolution (state-wide cleanup and beautification campaign in which 108 communities participated), Explo '76 (Denver metro area career fair), operation of Ecology Bus in rural Colorado junior high schools, workshops on solid waste management, awards programs for schools and communities, participation in Clean World International Conference in Dublin, Ireland.

Materials: Free environmental films; fact sheets on solid waste, air pollution, water pollution; recycling directory; curriculum suggestions for teachers; tips for organizing a community cleanup; litter bags; trash bags; decals for trash cans, cars, etc; speakers bureau.

Funding: Partially funded by Colorado Department of Natural Resources. partially by private donations.

Future Plans: Implementation of the Clean Community System (CCS) as developed by Keep America Beautiful. The CCS is an on-going, community-wide, in-depth program designed to fight litter and solid waste problems, conserve natural resources, and beautify the community. Through the CCS the sources of litter in the community are identified, a program of continuous public education at all levels is implemented, litter-control ordinances are up-dated and enforced, and sanitation technology is improved. The CCS is the first national program which seeks to reduce litter through behavioral science techniques applied in a logical and orderly manner by a citizens' committee at the local level.

---Theresa Cooley
Secretary
September 1976

ENVIRONMENTAL EDUCATION CENTER

Larry Schaefer, Director; Area Cooperative Educational Services,
800 Dixwell Avenue, New Haven, Connecticut 06511; (203)562-9967 or
for Connecticut residents: 1-800-922-1567.

Objective: To promote the implementation of environmental education into the school and community programs.

Specific Objectives:

1. Curriculum Adoption/Adaption/Implementation
2. Teacher In-service and Pre-service Training
3. Information Dissemination
4. Program Development

Target Audience:

1. Public and Private Schools in Connecticut, grades K-12.
2. Community Organizations.

Methododology:

1. Operate an EE Curriculum Library
2. In-service Workshops for Teachers
3. Operate EE Resource Center
4. Operate EE Media Loan Library
5. Disseminate monthly newsletter
6. Curriculum Development Programs
7. Computer Based Resource Units in EE

Materials Produced:

1. Monthly Newsletter (included in membership).
2. Land Use Decision Making Kit: A set of seventeen self-instructional audio-tutorial units on land use. Units include: Map Reading, Aerial Photography, Geosystems, Hydrosystems, Inland Wetlands, Coastal Wetlands, Uplands, Open Space, Planning for People, Cultural Systems, Local Implementation, State and Federal Implementation, Economics of Land Use, Synthesis: Buildability, and Synthesis: Attractiveness. Total Kit costs: $200.00. Individual units range from $18 to $30.

3. ECO-KIT: A set of six self-instructional audio-tutorial units. Unit titles include: Introduction to Ecology; Water Pollution; Air Pollution; Noise Pollution; Population I and Population II. The cost is $30.00 for six units.

4. An Introduction to Population, Environment and Society: A Teacher's resource manual. Cost: $6.00.

5. Catalogue of EE Resources (included in membership - not for sale).

Funding Sources: Membership; Title IV Part C; Sale of Materials; Rental of Films.

Publications:

1. Audio-Tutorial Instruction Invades City Hall

2. "A Self-Instructional Approach to Environmental Decision Making--Focus on Land Use", Journal of Environmental Education (in press).

3. "Land Use Decision Making: A Community Issue", Current Issues in Environmental Education - 1976.

4. "Community Education in Land Use Decision Making: New Instructional Materials", Current Issues in Environmental Education - 1975.

5. "Education in Land Use Decision Making", Present and Future of Coasts, Proceedings of the First Annual Conference of the Coastal Society.

Plans for the Future:

1. Continued development of in-service programs and resource center.

2. Development of a notebook of environmental education infusion ideas and activities for each grade of subject K-12.

3. Validation and production of the simulation game, PLANFAM.

---Larry Schaefer
October 1976

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

U. S. SCIENTISTS TO HELP COUNTRIES STUDY POLLUTION, FOOD, AND MEDICAL PROBLEMS

Global problems ranging from pollution in the Aegean Sea, wilting potato crops in Brazil, and sources of food and medicine in the Philippines will be studied by U. S. researchers awarded grants today by the National Science Foundation (NSF).

The awards, totaling $284,950, were made to 30 scientists and engineers from 27 U. S. colleges and universities under a program administered by NSF's Scientists and Engineers in Economic Development (SEED) program. Now in its seventh year in NSF's Division of International Programs, the SEED program is funded by the Agency for International Development (AID).

The U. S. researchers will spend up to a year teaching and conducting research in biology, mathematics, engineering, chemistry, energy, food and nutritional sciences and other fields. They were invited by universities and technical institutions in the developing countries.

Ideas for these projects come from experts in the host countries and in the United States. In Turkey, a chemist from California State University will study the blood pigments of lobsters, shrimps, crabs, octopi, and economically important fishes for indications of metal ions being discharged into the Aegean Sea. In Brazil, a plant pathologist from the University of Georgia will identify strains of bacteria causing food plants and other crops to wilt--potatoes, tomatoes, bananas, and tobacco. He will assess methods for reducing losses in production due to plant wilt. In the Philippines, a Mississippi State University zoologist will help study mangrove and palm swamps as sources of firewood, building materials, tannin, food, medicinals, and raw materials for cottage industries.

Of the 30 awards this year, 14 are research-teaching grants. Sixteen are international travel grants for shorter visits to conduct seminars, give lectures, review research projects, and survey educational developments. Institutions in the developing countries as well as those in the U. S. contribute financially to the projects.

The 17 countries participating in the 1977 SEED program are: Afghanistan, Bolivia, Brazil, Chile, Colombia, Ethiopia, Indonesia, Jamaica, Korea, Malaysia, Nigeria, Philippines, Republic of Panama, Sri Lanka, Tanzania, Thailand, and Turkey.

Attached is a list of scientists and engineers who have received awards under the 1977 SEED program. NSF said that in addition to the 30 grants already made, other grants may be awarded later.

SCIENTISTS AND ENGINEERS IN ECONOMIC DEVELOPMENT
RESEARCH/TEACHING GRANTS AWARDED MAY 1977

Name and Affiliation	Host Institution and Country	Description of Project	Amount
Ahmad, Shair Department of Mathematics Oklahoma State Univ Stillwater, OK 74074	Univ de Antioquia Univ de Medellin Medellin, Colombia	Contribute to improvements in the teaching of mathematics in Colombian universities.	$ 8,900
Carlander, Kenneth Dept of Fisheries Iowa State University Ames, Iowa 50010	Satya Wacana Christian Univ Salatiga, Indonesia	Assist university staff in establishing a fisheries curriculum and participate in limnology and fishery research on Rawa Pening Lake.	$22,900
Chandra, Purna Dept of Biology Lake Sup. State College Sault Ste. Marie, MI 49783	Agricultural College Alemaya, Ethiopia	Teach and conduct research on soil microbiology: assist in the reorganization of the soils laboratory at the Agricultural College.	$19,600
de la Cruz, Armando Dept of Zoology Mississippi State Univ Mississippi State, MS 39762	Philippines, Indonesia, Malaysia & Thailand	Participate in a study of biology of mangrove and nipa palm swamps and collaborate in the teaching of new courses in ecology at Southern Capitol College.	$22,800
Fiasca, Michael Department of Ed Portland State Univ Portland, OR 97207	Regional Ed Center for Science and Math Penang, Malaysia	Plan for the implementation of a cooperative effort to develop new science teaching materials with inputs from various institutions in the State of Oregon.	$ 7,900

RESEARCH/TEACHING GRANTS (CONT..)

Name and Affiliation	Host Institution and Country	Description of Project	Amount
Lamba, Surendar School of Pharmacy Florida Univ Tallahassee, FL 32307	Universidade De Panama Republic of Panama	Conduct research on plants containing physiologically active substances and explore sources of raw materials useful for the manufacture of drugs.	$16,100
Lee, Hak C. Dept of Management Science State Univ of NY Albany, NY 12222	Yonsei University Seoul, Korea	Study management practices which facilitate the use of computers and teach new courses in business administration which emphasize computer applications.	$20,900
Michaelson, Karen Dept of Anthropology State Univ at Binghamton Binghamton, NY 13901	Kabul University Kabul, Afghanistan	Train local personnel to conduct social impact assessment, provide background information on anticipated impact of specific projects planned for Kabul, and stimulate interest in social impact research.	$22,700
Schaad, N.W. Dept of Plant Pathology Univ of GA Experiment, GA 30212	Universidade de Brasilia Brasilia, Brazil	Identify strains of bacteria responsible for plant wilt in potatoes, tomatoes, bananas, and tobacco; and assess methods for reducing losses in production due to plant wilt	$ 8,800
Shroder, John Dept of Geography & Geology Univ of Nebraska Omaha, NE 68101	Kabul University Kabul, Afghanistan	Coordinate on-site activities dealing with the preparation of a national atlas.	$21,400

RESEARCH/TEACHING GRANTS (CONT..)

Name and Affiliation	Host Institution and Country	Description of Project	Amount
Senozan, Nail Dept of Chemistry Calif State Univ Long Beach, CA 90840	Ege University Izmir, Turkey	Study blood pigments of commercially important marine fauna as possible indices of metal ion pollution in the Agean Sea.	$22,900
Stockland, Alan Dept of Microbiology Weber State College Odgen, Utah 84403	Sebelas Maret Univ Sebelas Maret, Indonesia	Assist Faculty of Medicine in establishing a curriculum in medical microbiology.	$25,300
Van Vorst, William Dept of Engineering Univ of Calif Los Angeles, CA 90024	Bogazici University Istanbul, Turkey	Work with faculty members to construct national energy models, study energy conversion systems, and develop an energy information system.	$20,300
Wais, Allen C. Dept of Molecular Biology Tufts University Boston, MA 02119	Univ of West Indies Kingston, Jamaica	Undertake research on new methods for control of algal blooms and integrate this research into the ongoing programs of the University's Division of Natural Sciences.	$17,200

SCIENTISTS AND ENGINEERS IN ECONOMIC DEVELOPMENT
INTERNATIONAL TRAVEL GRANTS AWARDED MAY 1977

Name and Affiliation	Host Institution and Country	Purpose of Travel	Amount
Barrett, James T. Dept of Microbiology Univ of Missouri Columbia, MO 65201	Univ of Lagos Lagos, Nigeria	Present a short course on medical immunology for medical students and residents and consult on local research projects in immunology.	$1,850
Bauer, Roger D. School of Natural Sciences Cal State Univ Long Beach, CA 90840	Ege University Izmir, Turkey	Consult on academic programs in biochemistry and related areas and plan for future inter-institutional projects.	$1,250
Breese, Wilbur Dept of Fisheries Oregon State Univ Corvallis, OR 97331	Universidad Del Norte Antobagasta, Chile	Explore opportunities for establishing commercially viable projects in the area of mariculture.	$1,400
Derrick, William R. Dept of Mathematics Univ of Montana Missoula, MT 59801	Univ del Valle Cali, Colombia	Lecture and conduct seminars at the VIIth Colombian Mathematics Colloquium	$ 800
Esmay, Merle L. Dept of Agr Engineering Michigan State East Lansing, MI 48824	Sri Lanka and Philippines	Carry out field research on post-harvest technology for rice and direct doctoral student research on the handling of rice after harvest to maximize production.	$4,650

TRAVEL GRANTS (CONT..)

Name and Affiliation	Host Institution and Country	Purpose of Travel	Amount
Chu, Yaohan Dept of Computer Science and Elect Engineering Univ of Maryland College Park, MD 20742	Asian Inst of Tech Bangkok, Thailand	Conduct a regional seminar on microprocessors and microcomputers and participate in a conference on computer applications in developing countries.	$2,050
Glasel, Jay A. Dept of Biochemistry Univ of Connecticut Farmington, CT 06032	Federal University Rio de Janeiro, Brazil	Give a graduate-level lecture course on nuclear magnetic resonance spectoscopy in biochemistry and biophysics and discuss instrumentation options.	$1,150
Hartnett, James Dept of Engineering Univ of Illinois Chicago, IL 60680	Asian Inst of Tech Bangkok, Thailand	Contribute to the further development of Regional Centre for Energy Heat and Mass Transfer and assist in planning for new programs in thermal science.	$2,100
Hennen, Joe Dept of Plant Pathology Purdue University W. Lafayette, IN 49707	Instituto Biologico Sao Paulo, Brazil	Collaborate on a study of plant pathogens in parts of Brazil designated for future agricultural development.	$1,400
Kanehiro, Yoshinori Dept of Soil Science Univ of Hawaii Honolulu, HI 96822	Institutions in Nigeria and Tanzania	Offer seminars on biological fixation of nitrogen in tropical soils and explore scope for future collaborative research.	$1,900

TRAVEL GRANTS (CONT..)

Name and Affiliation	Host Institution and Country	Description of Project	Amount
Middleditch, Brian Dept of Biophysical Science Univ of Houston Houston, TX 77004	Sugar Indust Res Inst and Col of Arts, Sci, & Tech Kingston, Jamaica	Discuss research on alternative uses of products of the sugar industry such as feedstock for crustacean mariculture and fermentation, and for fiberboard manufacture.	$ 200
Nelson, Robert E. Dept of Business Ed Univ of Illinois Urbana, IL 61301	University of Philippines Tacloban City, Philippines	Assist in the development of teaching materials for a new curriculum in entrepreneurship intended for future managers of small business enterprises.	$2,000
Steinbeck, Klaus Dept of Forest Resources Univ of Georgia Athens, GA 30602	Univ of Ibadan Ibadan, Nigeria	Study useful applications of forest cropping (coppice forestry) for production of food, fibre, and fuel in tropical forests.	$1,400
Tainter, Frank H. Dept of Plant Pathology Univ of Arkansas Fayetteville, AR 72701	Univ of Chile Santiago, Chile	Survey wood decay fungi found in dwellings and conduct research on test procedures which would be appropriate for establishing wood decay resistance under local conditions.	$1,200
Van Reen, Robert Dept of Food & Nutrition Univ of Hawaii Honolulu, HI 96822	Ramathibodi Hosp and Mahidol Univ Bangkok, Thailand	Assist in an evaluation and improvement of a new MSc program in nutrition and consult on current and future research programs in nutrition.	$2,900
Weiss, Richard Dept of Chemistry Georgetown Univ Washington, DC 20057	Univ Federal de Bahia Salvador, Bahia Brazil	Teach a short course in photochemistry and plan for investigations of solar energy technology which require simple facilities.	$1,000

Investigating Your Environment: The Process Approach to Environmental Education

Forest Service - U. S. Department of Agriculture - 1977

During the period 1970-1977, the Forest Service of the United States Department of Agriculture developed, with the assistance of many other individuals from concerned agencies and organizations, an environmental education program designed for educators and resource managers that would meet the following goals:

-- To demonstrate, using examples from the environment, a successful "process approach" to education which would involve the student, the teacher, and the subject in active investigations leading to the collection and evaluation of data, the formulation of hypothesis based on this data, the checking of these hypothesis by actual experimentation, and the application of the results to the solution of group problems based on environmental issues.

-- To teach the value of group interaction in problem-solving situations.

-- To create a basis for continued dialogue between diverse elements of society.

-- To provide participants with a better understanding of the interrelationships between all environmental factors.

Since the beginning of the program, there have been over 40,000 participants in over 500 workshops held throughout the country. These workshops have been co-sponsored by a wide variety of public and private agencies and organizations and are regularly accredited by 83 different colleges and universities. The program is open-ended, reflects no specific concepts of management, and urges all participants to gather facts and think for themselves.

For information contact: Chief, Forest Service, U.S.D.A., Environmental Education Programs, Box 2417, Washington, DC 20013 USA

Environmental Education Activities
Soil Conservation Service

A nationwide, multidisciplinary technical action agency, the Soil Conservation Service is part of the United States Department of Agriculture. SCS has long recognized that attainment and maintenance of an acceptable level of environmental quality essential to the physical, mental, social, and economic welfare of our nation and its people are rooted in formal and nonformal environmental education. More than 3,000 local offices of the Soil Conservation Service in cooperation with locally organized conservation districts have responsibility for providing data, interpretive information, and on-site technical and other help for preventing and solving problems of land use and conservation management of natural resources.

SCS maintains four employee training centers to provide continuous learning experiences in areas of ecology, sociology, and appropriate technical fields for the biologists, agronomists, soil scientists, hydrologists, economists, geologists, foresters, engineers, range conservationists, and other resource conservationists the agency employs. Six years ago, SCS designed a rigorous 16-month home study course on "The American Environment" to help professional employees improve their understanding of the environment. For four years, SCS has contracted with leading universities to provide intensive ecologically oriented training for several hundred key program leaders, beginning with the agency head and his top staff.

In initiating, supporting, and directly assisting environmental education as a function of general education, SCS has aligned its efforts with local education agencies, state departments of education, colleges and universities, and major youth serving organizations. SCS has resisted the temptation to produce dogmatic, packaged programs and has channeled its efforts to helping local schools, youth groups, and citizen organizations meet state and locally defined environmental education needs and objectives with the physical, economic, and cultural resources available.

Support for environmental education as an integral part of school curricula is written SCS policy directing professional staff members to provide requested assistance at all levels of education. SCS activities to initiate and assist formal and nonformal environmental education include:

1. On-site help to schools and teachers in planning and developing outdoor classrooms as laboratories for hands-on learning experiences in using and managing natural resources to develop knowledge, skills, and attitudes for preventing and solving environmental problems. Working with real environmental problems enables students to learn how their decisions and behavior affect other living things and helps them to define their personal relationship to their environment.

2. Consultive and technical services to help teachers and students with the design, gathering and analysis of data, and interpretation of information for specific environmental studies. Such studies usually are on-going projects in community environmental improvement or they may be resource management oriented and require decisions by students based on understanding of ecosystem processes.

3. Cooperation with educational institutions, organizations, and other agencies in conducting environmental education workshops and seminars to help teachers design and implement environmental education programs and to identify and effectively use outdoor learning/teaching opportunities. Training sessions may be community centered or part of college and university undergraduate or graduate programs for teachers.

4. Publications specifically designed for teacher or group leader use in planning and carrying out environmental learning experiences for students. More than a million copies of at least two such publications have been distributed to teachers and schools. Widespread dissemination of information about successful environmental education programs, projects and activities through the monthly SCS magazine.

5. Assistance to the major youth-serving organizations (Boy Scouts, Girl Scouts, 4-H, FFA and others) by providing environmental learning materials, direct help on the design and preparation of environmental education publications, visual aids, and programs, and on-site conservation technical services for specific resource management projects.

6. Public participation in helping solve environmental problems through local organizations and units of government serving as sponsors of federally funded resource conservation and development programs and watershed protection and flood prevention projects.

YOUTH CONSERVATION CORPS

The Youth Conservation Corps (YCC) is jointly administered by the Department of Agriculture-Forest Service and the Department of the Interior. Requests for information on the program should be sent to either of the following offices: Director, Human Resource Programs, Department of Agriculture-Forest Service, P.O. Box 2417, Washington, D.C. 20013; or Director, Office of Manpower Training and Youth Activities, Department of the Interior, Washington, D.C. 20014.

The YCC program has three main objectives. They are as follows:

1. To provide gainful employment of America's youth, ages 15-18, during the summer months in a healthful outdoor atmosphere.

2. To provide an opportunity for understanding and appreciation of the Nation's environment and heritage.

3. To further the development and maintenance of the natural resources of the United States by the youth who will ultimately be responsible for maintaining and managing these resources for the American people.

The Environmental Awareness program is integrated with work projects as much as possible. At least 10 hours every week are spent dealing with the specific goals and objectives of the Environmental Awareness program. These goals are:

1. To increase awareness of ecological principles that govern the environment.

2. To better understand man's social, economic, historical, cultural and physical relationships with the environment.

3. To increase awareness of the wide range of attitudes and personal values relating to the environment.

4. To assist each participant in recognizing the effect of a personal environment ethic on the environment.

5. To experience problem-solving and decision-making processes which are applied to environmental management concerns.

6. To increase understanding of the overall benefits of the YCC work program on the environment.

The 8-week summer YCC program is a very short time to accomplish these goals. Individual camps in all States develop most of their own methodologies for involving the youth in environmental awareness. There are two publications that assist them in their efforts; both of these are available from the Government Printing Office (GPO):

"YCC Sourcebook for Environmental Awareness: Man and Natural Resources" GPO Stock #024-000-00822-3; $1.90 each

"YCC Pocketbook for Environmental Awareness: Man and Natural Resources" GPO Stock #024-000-00821-5; $1.65 each

These two publications are now being revised so copies are not available from this office. The 1976 editions are still available from GPO. The 1977 editions will be available by January 1, 1977.

We have also developed a film, "Hard Work and Good Times (The YCC Experience)", explaining the entire YCC program and the Environmental Awareness aspect. Copies are available at $95 each from: Southwest Iowa Learning Resources Center, 401 Reed Street, Red Oak, Iowa 51566.

YCC enrollees are employed to work on conservation projects in their own state. Environmental Awareness is an integral part of the work projects. The YCC is open to youth between the ages of 15-18 and applications can be obtained by writing to: U.S. Youth Conservation Corps, P.O. Box 2975, Washington, D.C. 20013.

Applications will be available after January 1, 1977, for the coming summer's program.

The Youth Conservation Corps was established in 1971 by Public Law 92-597 and receives yearly funding from Congress. It has been a very successful program and will continue to help serve the youth and Natural Resource Management agencies throughout the Nation.

---Jack W. McElroy
Acting Director of Human Resource Programs
Department of Agriculture-Forest Service
December 1976

THE ALLIANCE FOR ENVIRONMENTAL EDUCATION

PROGRAM ACTIVITIES AND ACCOMPLISHMENTS
1976 - 1977

The Alliance is a non-profit, public foundation. It is a consortium of national and regional organizations that have a combined membership of more than 15,000,000 people. These groups have joined together to promote the development, implementation and coordination of effective environmental education programs to meet the broad spectrum of environment/development education needs. Each of the organizations brings its unique strengths and interests to the Alliance. The Alliance provides a forum for the range of perspectives that relate to environmental issues. Rather than advocating particular solutions to problems, the Alliance focuses on the approaches to problem solving and prevention of systemic, as opposed to special interest, problems.

The aims of the Alliance include:

- encouraging communication and cooperation among members;
- performing services and conducting activities of value to organizations, agencies and institutions concerned with environmental education;
- facilitating communications among organizations, industries and agencies concerned with environmental management.

To achieve these broad objectives the activities of the Alliance include:

- Preparing and distributing a newsletter, primarily for internal distribution, to inform the Affiliates of relevant events conducted in the fields of environment and education.
- Co-sponsoring the National Planning Conference with a theme of "Environmental Education Prospectives and Perspectives" (the Snowmass Conference), with the Western Regional Environmental Education Council.
- Producing and distributing a series of filmstrip sets largely supported through donations from individual companies. The "4 E Project" deals with environmental issues in a manner aimed at stimulating discussions among secondary school students about the range of concerns that need to be addressed.
- Working with the Environmental Education Subcommittee of the Federal Interagency Committee on Education (FICE) in reviewing materials prepared by the Subcommittee.

Alliance Affiliates
American Federation of Teachers
American Forest Institute
American Institute of Architects
American Nature Study Society
American Society for Ecological Education
Association for Environmental and Outdoor Education
Boy Scouts of America
Conservation Education Association
Foresta Institute
Girl Scouts of the U S A
Humane Society of the United States
International Council for Health Physical Education and Recreation
Izaak Walton League of America
League of Women Voters of the United States
Massachusetts Audubon Society
National Association for Environmental Education
National Association of Conservation Districts
National Audubon Society
National Council for Geographic Education
National Education Association
National Parks and Conservation Association
National Science Teachers Association
National Wildlife Federation
The Nature Conservancy
Soil Conservation Society of America
Thorne Ecological Institute
UAW Conservation Department
Western Regional Environmental Education Council
Wildlife Management Institute

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- Participating on the FICE Subcommittee on International Environmental Education. This group is assisting in the United States preparations for participation in the Intergovernmental Conference on EE that will be held in Tbilisi, Georgia, U.S.S.R. from October 14 through 26, 1977.

- Conducting the environmental education track at the August 1976 Chautauqua Education Week. The program included an overview of international EE; discussions of critical international environmental issues; and an examination of the interfaces of environmental education with career education, teacher education, competency based education, educational technology and the social studies.

- Sponsoring and assisting in conducting the August 1977 Chautauqua Education Week. The program is being run under the theme of "Education for National Citizenship through a Global Lens: The Quest for a National Policy."

- Conducting the October 1976 North American Regional Seminar on Environmental Education in St. Louis in cooperation with the Unesco-UNEP Environmental Education Program and the Canadian and U.S. Commissions for Unesco. The Seminar brought together leaders from government, labor, industry, education, conservation and community leaders, and the media to assess Canadian and U.S. environmental education needs and resources. Effort was also directed to developing strategies for the implementation of necessary programs. The report of the conference will be available in September 1977.

Support for the activities of the Alliance comes from various sources including government agencies, foundation, industry, labor, and individual donors. We seek to include a wide range of views in our membership and programs: environment, education, government, labor, industry and business. The Alliance is committed to developing and disseminating a balanced view of society's environmental problems and the range of effective solutions.

Recently affiliated organizations: Bolton Institute, Edison Electric Institute, Forum for the Advancement of Students in Science and Technology, and the National Council for the Social Studies.

SUMMER 1977

POPULATION EDUCATION PROJECT

Elaine Murphy, Director, Population Education, Zero Population Growth,
1346 Connecticut Avenue N.W., Washington, D.C. 20036; (202)785-0100.

In 1966 Planned Parenthood-World Population held a symposium to discuss "Family Planning, Population Problems, and the Secondary School Curriculum" (PP-WP, 515 Madison Avenue, New York, New York 10022, 1966, free booklet). At this meeting, various demographers and educators pointed out that while population growth and its attendant problems impinge upon the lives and future of American children, the topic is rarely examined in the schools.

More recently, there has been considerable effort directed toward inclusion of sound population studies in school curricula, not only in the secondary schools, but from kindergarten through college.

Many population organizations consider population education an important focus for activities, as do several universities, professional associations, and leaders in educational change. ZPG has also responded to this call by providing speakers, films and materials for classroom use; by lobbying for increased federal funding in this area; and, through many of its chapters, by organizing and leading teacher-training workshops. An increase in school coverage of population topics has resulted, but usually such coverage still depends on the responsiveness of dedicated individual teachers rather than adoption of population education as a school system priority.

It is the latter goal -- institutionalization -- that is the focus of ZPG's current population education project, funded by the U.S. Office of Environmental Education and a private foundation. Our purpose is to go beyond providing assistance to those teachers who wish to include population in their classes; our purpose is to introduce or to expand population education in the public school systems of selected model states.

The list now includes Maryland, Delaware, New Jersey, Ohio, Florida, Michigan, New York, Colorado, and Iowa.

How does one go about "systematizing?" While there are some similarities in our approaches for all the states, ultimately the project must be designed specifically for each state. In most cases, we facilitate groups interested in population and environmental education to join forces in a cooperative venture. These groups usually include the State Department of Education, regional school systems, a university or college, local environmental or population organizations, and ZPG. Further support is provided by the Population Reference Bureau, Population Institute, American Association for the Advancement of Science, and other educational and environmental organizations. In many ways, ZPG's role is the identification and coordination of those individuals or groups dedicated to both protection of the planet and relevant classroom instruction.

Initially, we have contacted respresentatives of state and local school systems to inform them of our project, and have met with such officials to discuss what is available in terms of curricula, materials, audio-visual aids, and teacher-training. Because population is, or should be, an essential component of environmental education, working with state or local coordinators of environmental education has been an effective approach.

Following cooperative planning with the various interested parties, ZPG co-sponsors with them one or two day workshops for administrators, curriculum supervisors, and teachers throughout that particular state. The workshops provide both the motivation and the "know-how" so that the participants can conduct teacher training in population education upon their return to their home school districts. The multiplier effect of these workshops is supplemented by articles in national newsletters and through population education sessions at annual meetings of educational associations. For example, at the 1976 meeting of the National Science Teachers Association, ZPG and the Population Reference Bureau cooperated in a workshop attended by 150 teachers; in addition, 16,000 copies of population education materials were distributed.

Helping to bring these various groups, which have similar goals but separate structures, to a unified, well-defined, educational commitment is the heart of ZPG's population education project. In cooperation with other groups, then, we stand ready to provide assistance in terms of workshops, conferences, and follow-up consultation. Moreover, we are happy to loan a number of educational films for a nominal handling charge.

---Elaine Murphy
September 1976

NATIONAL WILDLIFE FEDERATION

John C. Stone, Education Coordinator, National Wildlife Federation,
1412 16th Street, N.W., Washington, D.C. 20036; (202)797-6800.

The Organization:

The National Wildlife Federation is a non-profit, non-government "grass-roots-type" organization dedicated to creating and maintaining a better environment with emphasis on the protection and preservation of wildlife.

The Federation represents some 3.5 million supporters composed of its members, which include subscribers to the Federation's various publications, and individual contributors. It has affiliate organizations in all 50 states, Puerto Rico, Guam, and the Virgin Islands through which it works on conservation and environmental problems.

The Federation serves as the focal point and spokesman for groups and individuals who share a common interest in nature in general, wildlife in particular, and the interrelationship of all living organisms with the earth. A tax-exempt organization, the Federation works primarily through educational means, pursuing a vigorous and influential program on behalf of resource conservation and environmental improvement.

History:

The Federation was established in 1936 during sessions of the first North American Wildlife Conference. The conference, summoned by President Franklin D. Roosevelt, was an initial step in mobilizing a national movement for restoring once abundant wildlife populations suffering the effects of environmental degradation, habitat loss, waste and neglect. The Federation was formed to provide leadership for all groups interested in the proper management of wildlife and natural resources.

Policies and Administration:

Policy of the Federation on conservation ideas is determined by delegates to annual meetings held in various regions of the country. The delegates are elected by National Wildlife Federation state affiliates.

Officers of the Federation and members of its board of directors are elected by these same delegates and serve without pay. Overall direction of the Federation's programs is provided by Thomas L. Kimball, Executive Vice President. Administrative direction is given by J. A. Brownridge, Administrative Vice President. Both men have long associations with the Federation.

Goals:

1. Adequate and enforced national and international water and air standards.

2. Adequate and enforced national and international solid waste management standards that will provide maximum recycling and re-use of natural resources.

3. Control of pests where absolutely necessary, preferably employing biological control or other means less harmful to the total environment than many of the chemicals presently in use.

4. Preservation of high quality wilderness and natural areas, outstanding wild rivers, scenic trails and estuarine areas.

5. Presentation of optimum numbers and variety of wildlife by designation of suitable areas as wildlife refuges, parks, seashores and lakeshores, recreation centers, and scenic rivers.

6. Scientific and professional, rather then emotional, management of wildlife, forest, and soil resources, rivers, lakes and oceans, and grasslands.

7. Protection of endangered wildlife and preservation of wildlife habitat.

Activities:

The Federation seeks to achieve its goals through a variety of activities which include:

1. Helping to develop and implement policy through liaison with Executive agencies in federal and state governments and by assembling and distributing information on Congressional natural resource activities.

2. Publishing a wide variety of material including "National Wildlife", "International Wildlife", and "Ranger Rick" magazines for a multitude of audiences as part of its educational efforts.

3. Working with schools by designing programs and providing audio-visual materials for use by teachers and students in achieving a better understanding of wildlife and environmental subjects.

4. Sponsoring a scholarship and research grant-in-aid program designed to assist doctoral and post-doctoral students engaged in specific environmental research.

5. Sponsoring meetings and conferences across the nation as part of the program to achieve greater public enlightenment and support.

(October 1976)

PROJECT LEARNING TREE

American Forest Institute
1619 Massachusetts Avenue, N.W.
Washington, D. C. 20036

Project Learning Tree (PLT) is a supplementary curriculum program in environmental education for integration into the regular curriculum, grades kindergarten through twelve. It is sponsored jointly by the Western Regional Environmental Education Council (WREEC), an association of state department of education and state resource management personnel from 13 western states; and the American Forest Institute (AFI), a non-profit organization representing all segments of the forest products industry - those that grow and harvest trees and those that manufacture lumber, paper, plywood, and other forest products.

The curriculum guides used in the program were written by classroom teachers, college professors and curriculum supervisors with technical information contributed by industry, resource staffs of state and federal governments and a number of private conservation organizations, for a better sense of balance. The program was originally developed by WREEC, AFI and Education/Research Systems, Inc., a private educational consulting firm.

The program is designed to assist students in developing the skills and acquiring the knowledge necessary to understand their relationship to the earth and its forest resources. The major goal is to develop an awareness of our interdependence with the land and the forest resource and the use of those resources; and knowledge of the scientific, technological, social, aesthetic and ethical factors relating to this interdependence.

The basic funding and overall policy for the program is provided by AFI. The day-to-day direction, however, is provided by the Project Learning Tree Planning and Advisory Council (PLTPAC) consisting of membership from industry and WREEC. This Council allows direct input to an industry program from educators in state departments of education and state resource management agencies.

The Council has been instrumental in guiding the program through its implementation, evaluation and revision stages. The program is available to teachers only through attendance at workshops usually coordinated by the state departments of education and funded by a grant from AFI. The actual plan for the implementation of PLT in each state is determined by a state PLT planning committee guided by AFI, the PLT staff and the state department of education. The coordination of the program with the state department of education and actual workshop staffing is the responsibility of the PLT staff selected by the PLTPAC and on contract to AFI.

The Council selected the Bureau of School Service and Research, University of Washington, Seattle, Washington, as the evaluator for the project. The Bureau utilized a classroom evaluation with instruments designed for the PLT materials. Teachers who had attended PLT workshops used the instruments with their students who had experienced activities from the PLT guides. Their scores were compared with the results of the same tests taken by students working with teachers, not acquainted with the program.

Comments received from teachers during the year the program has been implemented in the west and the evaluation have guided the revision of the materials now underway. During 1977 the program will begin to be available outside the west. Five year plans for the program include another evaluation and revision, and workshops in possibly 26 additional states.

The two curriculum guides have: approximately 165 multi-disciplinary activities to be integrated in subject areas such as--language arts, science, mathematics, social studies, humanities, fine arts; a format--non-sequenced with each activity standing on its own with a topic index for use in finding compatible activities to develop units of study; a resource list for virtually every activity; a bibliography of teacher and student materials, films, simulations/games; a glossary; additional organizations as possible sources of material; a variety of modes to accommodate different teaching and learning styles.

September 28, 1977

Miss June McSwain
Director, Education

Submitted to: FICE Subcommittee on International Environmental Education

THE WILDERNESS SOCIETY
1901 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

(202) 293-2732

Among the governments of the world, the need for permanent preservation of wild land (wilderness) has been largely ignored. This may be seen as a reflection of the preoccupation with other needs, and the lack of a positive approach to the environmental needs of future generations. Wilderness has a unique place in the scale of environmental and cultural values. Both the formal and informal education of youth and adults should put these values in perspective in order to stimulate and provide support for implementation of statutory designation of wilderness areas.

Wilderness has attributes for creative recreation under natural conditions, and for scenic, scientific, educational, conservation, and historical purposes. Wilderness can serve as an ecological norm for evaluating the effects of man-caused changes on land outside the wilderness. Without statutory preservation, wilderness lands may vanish forever.

In the United States purposeful statutory classification of wilderness areas in certain categories of federally owned land takes place through Congressional action under the Wilderness Act of 1964. Such areas are included in a National Wilderness Preservation System. They are included as generally extensive units within categories of land managed by executive agencies for other purposes such as national forests, national parks, etc., but the wilderness units themselves are managed to remain without permanent roads or habitation, without commercial exploitation or development, and with the imprint of man substantially unnoticeable. They are given explicit boundaries through action by Congress.

The Wilderness Society, founded in 1935, and incorporated as a non-profit citizen organization devoted principally to wilderness preservation in the public interest and to education in wilderness values, along with other specific environmental issues, conducts the following activities as part of its educational program:

(1) Workshops - The Wilderness Society conducts regional workshops in various parts of the country, through guidance by its staff and regional representatives. The workshops provide leadership training, build citizen effectiveness, and suggest approaches for the initiation and support of wilderness and other environmental proposals. Interviews with executive agency officials concerned with the issue at hand are arranged. Participation in the workshops is without cost to the participant.

(2) Annual Seminar - Supplementing the workshops The Wilderness Society conducts a week-long working seminar at Washington, D. C. Carefully selected wilderness leaders throughout the country are brought to the seminar, all-expense paid. They are provided a firsthand opportunity to learn the procedures involved in working with government. They meet with staff from federal and private agencies. A member of Congress may lecture on the legislator's point of view with regard to expert testimony with regard to major environmental issues. Training experience occurs through contact with the processes and personalities involved in government. When possible, any special hearings, meetings, and legislative mark-up sessions are attended.

(3) The Wilderness Society conducts a series of non-profit guided wilderness trips by horseback, backpack, canoe, or backpack/raft. These trips are open to the public as a direct means of introducing people to the values and realities of wilderness. Two special trips in 1977 were scheduled for youth, workshop-style. Four college credit courses in wilderness education were taught in the field by a college instructor.

(4) The Wilderness Society publishes a quarterly magazine, The Living Wilderness, in full color, for its seventy-thousand members.

Michael Nadel
Special Consultant

CURRICULUM MODIFICATION THROUGH ENVIRONMENTAL STUDIES

Jay Jarrett, Director, Martin County Schools' Environmental Studies Center, 2900 N. E. Indian River Drive, Jensen Beach, Florida 33457; (305)334-1262.

Originally funded through ESEA Title III in August of 1972, the project is a hands-on, field-oriented program of environmental education centered around an estuarine area on Florida's east coast. Thirty-seven specific objectives were developed for grades K-8 and the program was conducted for all school children, public and private, in those grades in Martin County for three years.

Upon completion of the three-year operational program, analysis of pre- and post-test scores showed learner gains significant at a .01 level on a t-test of correlated means. The project was validated by the Office of Education Joint Dissemination Review Panel in December of 1975 and funding obtained through ESEA Title III/IV-C for a three-year demonstration/diffusion phase. The student-based program continues to operate on funds supplied by the School Board of Martin County.

Program methodology consists of the study in the home classroom of a package of teacher-produced learning materials (including conventional written materials, audio-visual units, puzzles, games, student activity books, etc.) followed by a once-a-year visit to the Center and physical environs for a hands-on reinforcement of the concepts presented in the classroom materials. The visit ranges in length from two hours for Kindergarten to two days for Grades 5 through 8.

Materials produced include nine packages of teacher- and student-based curriculum materials (one for each grade), 23 slide-tape instructional units, five sets of flash cards, card game, feltboard pieces and various other written materials.

Copies of all materials are available at reproduction cost from the Center. A complete program of training, technical assistance and impact assessment is available to schools wishing to adopt or adapt the program to their locale. Details may be obtained by writing the Center. Most costs of such assistance are borne by the Center through its ESEA IV-C budget until September 1978.

The Center operates throughout the school year and is open to visitation at all times by interested educators.

Future plans include adapting the materials to freshwater and terrestrial field sites, development of solar- and wind-energy curriculum materials, audio-visual testing techniques, expansion of overnight camping/learning activities, development of satellite centers throughout the county and the development of a foundation to finance the continuation and expansion of the program.

Resumes of the program have appeared in Florida Schools, December, 1974 and American Education, November, 1976.

---Jay Jarrett
October 1976

ENVIRONMENTAL EDUCATION IN FLORIDA SCHOOLS

John E. Stefany, AIA

Florida's unusually rapid growth in recent years has created a host of environmental problems that resemble those being experienced by other regions of the country. But Florida's have been more severe, making the need for control all the more urgent. Because this state also has enviable assets for gaining such control—a legislature committed to environmental education, abundant university talent and a citizenry concerned with preventing further plunder of the environment—many look to Florida as the ideal educational laboratory in which to pursue solutions to environmental problems.

Florida's efforts to bring environmental education into the public schools grew out of years of activity by a small group of citizens primarily concerned with the conservation of the natural, rather than the built, environment. Beginning in 1965, the early efforts of this citizen's group were fragmented and their resources pitifully short. Before long, however, they turned their efforts toward the political arena, as they recognized the need to define long-range goals and develop statewide direction. At the same time, support for legislation was growing rapidly because of Florida's rapidly worsening environmental problems.

Therefore, the environmental education bill of 1970 received broad support and was easily passed. This was due in part because it was less controversial than other bills dealing with the environment which endorsed direct control of land use. The goals of the bill were to develop a master plan for environmental education in Florida's primary and secondary schools; to establish an advisory council composed of legislators, educators and representatives of organizations concerned about the environment, and to assess the state's current environmental programs and capabilities. The sum of $75,000 was appropriated to implement the bill during its first year; the amount was increased for subsequent years.

One of the first lessons taught by the 1970 legislation was that in order to have influence and credibility, advisory councils must be representative of the full range of groups having an interest in environmental issues, from conservationists to pollution-producing industries. Since 1970, local as well as state-level advisory councils have been established in over half the county school districts. They have been valuable in gathering and disseminating data, identifying community goals in environmental education and rallying local support for legislative action.

Inventorying the state's existing environmental programs showed that although there were excellent projects being carried on in schools, there was also a great need for materials and expertise which dealt with the built environment.

The preliminary bill had entirely neglected the urban environment, and because of this was to be soon amended. As a result of efforts by the Florida Association of Architects, an architect was appointed to the advisory council. At the same time, citizen concern with the built environment was mounting as areas of natural beauty were being replaced by ugly cancers of uncontrolled and unserviced urban sprawl. Local government, utilities, the design professions, environmental groups and the development industry all rallied around the cause of expanding education about the environment. Some saw it as a viable alternative to the passage of "no growth" legislation.

The Florida environmental education bill as amended in 1973 used other lessons learned in the process of trying to implement the initial 1970 act. Importantly, the Florida bill stressed that environmental education cannot be a single course or discipline, but must act instead as an "umbrella," under which other courses can be pulled together for purposes of creating awareness about the environment and change in our treatment of it. A statewide bureau of environmental education was therefore created within the division of elementary and secondary education.

Underlying the programs was the idea that through tools taught in math, social studies, art, literature and other courses, selected environmental problems could be recognized, defined and discussed and alternatives found to continued spoilage. The new trend was to use the environment itself, including community organizations and citizen participation to teach youngsters. As State Commissioner of Education Ralph D. Turlington said, "Children should be given an opportunity to study the resources of their environment under natural conditions and to become involved in open-ended explorations of their surroundings." The goals of environmental education, as stated by him, are to:

- "Stress the development of attitudes rather than the acquisition of facts. Emphasis will be placed on the development of a positive self-concept among students concerning their role in society and their responsibility to wisely manage the environment.
- "Strive to involve the total community in the environmental education process and to enlist the aid of all agencies, both private and governmental, who share a concern for the environment.
- "Stress the processes of inquiry and problem solving.
- "Include a comprehensive pre-service and in-service teacher training program.
- "Be continuously involved in research to study the efforts being made elsewhere in this field, to establish pilot programs, to evaluate more accurately the outcome of existing programs and to determine the best means of producing the change in value patterns necessary to solve today's environmental problems."

Under the act, each district school board and school principal can submit to the commissioner a proposed program. According to the guidelines, each is to stress coordination with other programs and development and distribution of instructional materials with "special concern being given to the urban environment."

To provide incentive, a "minigrant" program was established, under which state department of education dollars are used to fund the development of "exemplary programs or instruction materials" submitted by district school systems or individual teachers. This incentive proved surprisingly successful. In 1974, $300,000 was granted directly to local school districts. A study made in 1973 showed that

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Mr. Stefany has been active in Florida's environmental education program since its beginnings and is a member of the state environmental education advisory council.

that this growth had slowed, undoubtedly accounting for less work for architectural firms. He said that New Hampshire and Vermont have placed an emphasis on exurban development which did not call for a like measure of architectural arrangement.

Specifically, he mentioned that Rhode Island, which is largely metropolitan Providence, had large cut-backs in the military installations, affecting architectural activity. Moreover, the unusual building program in metropolitan Atlanta has tapered off perceptibly, affecting the state's decline in architectural work.

As for the states that showed increased architectural employment, Berry pointed out that Alaska, West Virginia and Wyoming are resource-based states which, under the impact of the energy crisis, are enjoying a growth that generates architectural activity. Iowa, Nevada, Missouri, Maine, Nebraska and Delaware, he suggested, perhaps reflect the trend of recent years during which nonmetropolitan areas grew by 4.2 percent as opposed to 2.8 percent in metropolitan areas. As for North Carolina, he hypothesized that this state has shown steady industrial growth.

Robert Allan Class, AIA, director of technical programs at the Institute, said: "Statistics that break down employment by type and size of firm and by states can only give a hint as to the factors influencing these numbers. What the figures *don't* show is how many firms recognized their plight early and came back with some sizable volume of business from Washington, D.C., or Teheran, Iran. A firm can be located in the architectural boondocks and still have a full portfolio of work obtained from sources far from home."

For 11 years, *Engineering News-Record* has reported annually on the largest design firms in this country and their growth in volume of business. This year's report (*see* May 15 issue) on the top 466 design firms indicated a billings/staff ratio jump in all types of firms. "The total number of professional employees working for the 389 firms on the list both in 1973 and 1974 increased 8.6 percent," ENR said. "Conversely, the total professional and technical staffs of all firms on this year's list . . . grew by just 2 percent from 1973's total. These figures are not entirely comparable, but they do show a trend in 1974."

The significant factor in 1974, when billings soared 27 percent, ENR reported, was foreign contracts awarded to "big industrial constructors." In 1974, foreign billings increased 44 percent over 1973, with billings in the Middle East alone hitting $61.6 million. These billings are for big firms with multidisciplinary teams. As mentioned previously, 71 percent of the firms responding to AIA's survey employed fewer than 10 persons.

Even among ENR's big firms, however, there was not an upward trend for all. "The 42 architectural firms on the roster for two consecutive years cut their professional staffs by an average 14 percent." Conversely, architect-engineer firms increased professional staffs by 6 percent and engineer-architects and consulting engineering firms by 10 percent each.

The ENR figures cannot be compared with the AIA survey data, of course. But, apparently, the two surveys suggest that architectural firms have suffered a significant loss of work during the period of economic recession. For the most part, the impact has been even deeper than some architects thought. Certainly, AIA's data describe a serious situation. *Mary E. Osman*

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local jurisdiction and private agencies were supplementing the state dollars, at a rate of four to one. Thus, the $300,000 funded in 1974 produced an estimated $1,200,000 throughout the 57 districts which participated in the program.

Another measure of the minigrant program's success is that 67 school districts and 165 individual teachers' proposals, requesting a total of $711,023, were received in 1974/75. For 1975/76, requests have been projected to a total of $1,050,000. Actual funding will fall short of these requests because of current economic constraints, but commitment to environmental education has never been higher.

A look at some of the environmental education projects funded in 1973/74 gives an indication of the types of specific programs included in the Florida environmental education effort:

- An interdisciplinary survey of the Miami River basin by students and teachers, which includes identifying environmental problems associated with the river and seeks solutions to these problems.
- Guided tours of "local areas of environmental concern," which emphasize the interrelationship of populations, pollution, natural resources and the quality of life.
- Workshops emphasizing on-campus field trips and the development of a county environmental education newsletter.
- The identification of existing and potential future environmental problems in one county by a community advisory committee. Education activities were then geared to creating an awareness and understanding of the problems.

In math and physics classes throughout Florida, students can be seen measuring and evaluating pollution. In social studies classes, the active case study approach is being used more and more.

For the most part, architects have yet to assume a role of significant leadership and participation in Florida's environmental education programs.

The Florida Association of Architects has attempted to encourage local architects to contact local school systems and volunteer their special technical skills to help develop curriculae and programs relating to the built environment that could qualify for state grants. And it has had moderate success.

Such programs provide a fantastic opportunity for architects to influence subject matter in the public schools. The expertise of architects has been welcomed by the state and it has contributed to closing the gap between advocates of the built and natural environments.

"Florida can serve as a model in environmental education, James E. Ellison, AIA, the Institute's administrator for education and research" has said. AIA has pulled together information from other state environmental education programs and hopes to draw especially from the Florida experience in developing guidelines for legislation and for action architects can take, acting individually and through components, to promote environmental education in state systems of education." ☐

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COMMUNITY LEADERS' TRAINING IN ENVIRONMENTAL STUDIES

Rodney F. Allen, David E. LaHart, Project Staff; The Florida State University, 426 Hull Drive, Tallahassee, Florida 32306; (904)644-5769.

Florida State University's Environmental Education Project has been heavily involved in training community leaders in environmental studies since the summer of 1974. This innovative program was funded for two years by Title I of the Higher Education Act of 1965.

The first year of the project focus was given to the development of teaching aids and materials specifically designed for community groups. For example, Girl Scout leaders developed environmental learning games and activities for Girl Scouts. The Apalachee Audubon Society developed materials designed to acquaint their membership with the wildlife found in North Florida. Thirty-five different "Ways" booklets were developed by community leaders with the help of the Project staff. These booklets were distributed by the adult leaders that designed and created the materials. A Florida-wide distribution was made with the cooperation of the Florida Office of Environmental Education.

Community leaders often gave their booklets to school teachers and other organizations or kept them for use as a family learning guide. Booklets, or specific units in the booklets, were reprinted by other organizations, several school districts, and even by state agencies. This "spin-off" is still continuing.

The second year of Title I support provided the opportunity to review the materials developed the previous year and regroup much of it into more functional packages. Activities developed by Garden Club Officers were combined with some materials developed by School Volunteers and by the Florida Association for Children Under Six (FACUS). This made a useful assortment of environmental activities and games for educators who work with children in pre-schools and in the primary grades. In addition, the Project staff conducted over thirty workshops to train new members of the organizations who had participated the first year.

This community environmental project was gratifying in several ways. A sizeable body of non-formal educators was reached through the Project. Non-formal educators make significant impacts on community learning; these educators now have environmental knowledge they can convey to their special audiences. The Project created a tremendous resource through its booklets. These booklets are available at local libraries and throughout the country through the Educational Resources Information Center.

The fact that the booklets and the ideas themselves are being copied speaks to their usefulness to educators in both the formal and non-formal educational sectors.

The impact is even greater than the ideas and activities represented in the four volumes of "Ways Booklets." The Project staff is often invited to participate in workshops and curriculum projects outside the geographical range of the original Project.

The two-year funding for the Project terminated in June, 1976, but the "spin-off" continues. Materials may be ordered through ERIC. Leaders in community groups may request short non-credit workshops through Florida State University's Center for Professional Development, Governmental and Community Services and credit institutes through the Center for Summer Sessions and Continuing Studies.

Ways to Environmental Education, Volume I, ED 100 734; Volume II, ED 103 325; Volume III, ED 106 213; Volume IV, ED 107 579.

Ways to Environmental Education, Final Report, ED 107 583.

Ways to Environmental Education, Final Report, ED 121 671.

---Rodney F. Allen
October 1976

ENVIRONMENTAL EDUCATION FOR THE SECONDARY SCHOOL

Mary A. Hepburn, Director; University of Georgia, Department of Social Science Education, 210 Dudley Hall, Athens, Georgia 30622; (404)542-7265.

The quality of public environmental policy is dependent on the quality of interdisciplinary environmental knowledge obtained by the citizenry. Effective environmental decision-making requires conceptualizations, information and thinking processes which are drawn from the sciences and social sciences and applied to environmental problems.

In the secondary schools the subjects most closely related to environmental decision-making are science and social studies. At this level environmental education has been hindered by the separate development of science and social studies curricula in separate departments. Such fragmentation can be overcome without overturning the traditional departmental structure. This project supported by a grant from the U.S. Office of Education initiates a cohesive interdisciplinary program of environmental studies jointly implemented in social studies and science courses.

The project program contains the following features:

1. Development of common conceptual themes and thought processes in both science and social studies.
2. The application of sound knowledge components from the two subject areas to environmental decision-making.
3. Motivation and preparation for civic competence through problem-solving activities.
4. A feasible method of interdisciplinary innovation within the existing secondary school framework.
5. Shared planning by teachers, subject specialists, students and community groups.
6. Development of instructional materials in a modular form which can be integrated into secondary school science and social studies curricula.
7. Field studies which encourage students to focus their knowledge and skills on real problems in their own communities while gaining broad generalizable environmental perspectives.
8. Active involvement of county government officials and local civic groups in planning and providing for field studies.
9. Vertical and horizontal development and testing of a two-year program of environmental studies.
10. Careful evaluation of overall cognitive and affective effects on students.

The Gwinnett County (Georgia) School District as cooperator to this project is the site for planning and implementation. Teachers, supervisors and students are actively involved in the planning and testing of the program.

---Mary A. Hepburn
October 1976

STEP (STUDENTS TOWARD ENVIRONMENTAL PARTICIPATION)

Ms. Pat Stanek, Environmental Education Specialist, National Park Service, Southeast Regional Office, 1895 Phoenix Blvd., Atlanta, Georgia 30349.

STEP is an environmental awareness/action program for high school students assisted by the National Park Service as part of its ongoing environmental education programs.

Objectives:

1. Build an awareness and understanding of themselves and of their relationship to the environment.

2. Communicate to others the awareness and environmental understanding.

3. Make a commitment to help others develop an environmental ethic.

4. Better the environmental quality of their communities by their direct action, in assisting these communities to meet growing environmental needs.

High school students participate in special training sessions to become resource persons for teaching elementary students on school grounds, "Environmental Learning Places." They inventory school teaching sites, develop site materials based upon school curriculum needs and their own training experiences, and train other high school students and teachers to conduct similar activities.

Cross-age and peer teaching, peer evaluation, communication strategies, discovery and investigative modes best characterize the educational tools of STEP.

A ten-hour STEP Environmental Leadership Training Course has been developed as a prototype. Regional and local adaptations are expected and encouraged. This course outline with supporting materials, certificates, and badges, has been developed by high school students with the assistance of National Park Service Interpretative personnel. Further environmental education curricular materials used in teaching are the NEED K-8 series. (National Environmental Education Development published by Silver Burdett Company, Morristown, New Jersey, in cooperation with the National Park Foundation).

STEP's environmental action programs are bounded only by the needs of their communities and by the energy of the members. STEP students are not pollution head hunters. They operate as Volunteers in the Park (VIP's) and environmental interpreters in National Park Service areas and in state and community parks; they investigate and monitor water quality and study issues surrounding environmental legislation; they testify at public hearings and lobby for needed environmental reform; they dialogue with industry when environmental violations are suspected.

No direct special funding sources are available for STEP. The National Park Service provides STEP development assistance as part of its ongoing environmental education program in all of its field areas. School districts and VIP's support further development or the STEP program as a part of its curricular and/or extra-curricular programs. State level or district grants often provide opportunities for additional STEP training programs.

STEP is a loosely structured umbrella organization in order to allow each group the maximum freedom to adapt the program to its own individual needs and those of its community. STEP has ongoing programs in some 22 states. Program evaluations are conducted by supporting institutions if so desired. Long-term continuity and continued involvement of STEP students are considered the best evaluation of the program.

Future plans do not include and have never included an organized effort to proselyte. Involvement spreads additional involvement. The National Park Service offers its land and personnel resources including volunteers (VIP's) to assist in support assistance.

Contact:

Chief, Interpretation and Visitor Services
National Park Service, Southeast Region
1895 Phoenix Boulevard
Atlanta, Georgia 30349

or

Chief, Interpretation and Visitor Services
National Park Service
Washington, D.C. 20240

---Pat Stanek
December 1976

CALLAWAY GARDENS

Dr. Robert A. Pedigo, Director of Education, Ida Cason Callaway Foundation, Callaway Gardens, Pine Mountain, Georgia 31822; (404)663-2281.

Callaway Gardens was conceived and founded by Mr. and Mrs. Cason J. Callaway, Sr., for the benefit of mankind. The overall purpose has been to maintain a place where all may find beauty, peace, inspiration, knowledge and wholesome recreation.

The Gardens is made of two parts: 2,500 acres of developed property illustrating advanced land management procedures featuring native floral areas, extensive horticultural collections and thirteen man-made lakes; and an adjacent 8,000 acres of undeveloped land with a wide diversity of native vegetation, wildlife and natural streams. Callaway Gardens is owned and operated by the Ida Cason Callaway Foundation, a non-profit educational, scientific, religious and charitable corporation, and Garden Services, Inc., a regular business corporation.

Environmental education programs are offered by the Education Department, which has a professional staff of seven. A wide variety of programs and activities are conducted. Here, visitors can learn the fundamental principles and the intimate details of almost every aspect of the natural world, either in our informally-structured "public" programs, by wandering along our information-laden trails, or just quietly investigating the marvels of living things in our protected setting.

The informal "public" programs are available to guests staying at our 365 room Holiday Inn, those staying at our 175 cottages and day visitors. These activities include such diverse topics and interests as: orienteering, insects, pioneer life, tree walks, vegetable garden walks, night sensitivity, two and one-half hour horseback rides, half-day hikes, bird walks, mushroom walks and many others. Each is led by an experienced staff person. Emphasis has been placed on involving people directly with the total environment through the "hands-on" approach. Ecological concepts are stressed throughout.

Schools (K-16) and youth groups receive more in-depth programs, yet they may choose from a wide selection of disciplines.

---Robert A. Pedigo
November 1976

MARINE SOCIAL STUDIES

Robert M. Ogata, Program Specialist, Environmental Education, State Department of Education, P.O. Box 2360, Honolulu, Hawaii 96804.

The Department of Education, State of Hawaii, received a P.L. 93-278 grant of $42,718 for Fiscal Year 1975 to develop resource materials for Marine Social Studies to be used in our high schools. Through a contract with the University of Hawaii, plans were made to have two units developed in marine studies, entitled, 1) Shoreline Management and 2) Ocean Resources, Law and Politics. The Shoreline Management unit has been completed and is currently being used on a trial basis by nine sections of students in four high schools with plans to increase this to ten sections in six high schools next semester.

Mr. Ray Conrad of the Curriculum Research and Development Group at the University of Hawaii supervised the efforts of developing the units and coordinated program implementation into the high schools with Mrs. Elaine Takenaka, Program Specialist for Social Studies of our Department.

---Robert M. Ogata
November 1976

WAIKIKI AQUARIUM

Sara Peck, Education Specialist, Waikiki Aquarium; University of Hawaii, 2777 Kalakaua Avenue, Honolulu, Hawaii 96815; (808)923-5335.

The Waikiki Aquarium began an education program in 1974 through grant funds from Sea Grant. From 1974 till now, the program has proved to be successful and has expanded both in numbers of participants and numbers of recipients.

The purpose of the education program is to offer innovative educational programs for the benefit of the entire community from kindergarten children through adults.

Specifically, the objectives of this program are to:

1. Provide marine education experiences for students, grades K-12, who visit the Aquarium through educational tours. Over 18,000 school children were toured in the 1975-76 school year.
2. Organize and administer a docent (volunteer) program to conduct educational tours.
3. Develop curriculum materials for use by teachers before and after such visits.
4. Develop live and static exhibits to complement the educational tours and inform the general public.
5. Provide courses, workshops, and seminars for interested community members.

To accomplish the above objectives, the Aquaruim continues to cooperate with the Department of Education, the University of Hawaii, and other public or private organizations interested in marine education.

Materials produced to date include:

1. Five Aquarium Booklets, which serve as guides for teachers on grade levels K-12.
2. Two "Touch Basket" presentstions which are available for young groups when they tour the Aquarium.
3. Twelve Slide/Tape Lectures on assorted topics and suited for different grade levels of comprehension.
4. One 120-page Docent Handbook.
5. A collection of over 1000 slides on marine biota and other marine related topics.

Several means of evaluation have been employed to assess this program. Evaluation has continued throughout the duration of the program through written evaluations from teachers receiving the tours. As a measure of the program's success, the 1976 State Legislature has seen fit to appropriate monies to fund three education positions at the Aquarium. Unfortunately, the University of Hawaii, proprietor of the Aquarium, has not been able to allocate the funds appropriated.

Future plans for the education program depend to a large degree on what funds will be made available. In the event that funding is secured, the docent touring program will continue, the classes and seminars will continue and expand in scope and audience, new displays, both live and static, will be created to further augment the educational thrust of the program, the neighbor island in-school-visitation program will continue and expand, additional materials and publications will be made available for the visitors and program participants.

---Sara Peck
November 1976

IDAHO CONSERVATION LEAGUE

Ed Cheney, Project Director, Agricultural Lands Project; Jeff Fereday, ICL Coordinator; Terry Myers, Project Staff; Idaho Conservation League, Box 844, Boise, Idaho 83701; (208)345-6936.

The Idaho Conservation League, sponsor of the Agricultural Lands Project funded under P.L. 93-278, is a non-partisan voice for conservation legislation and policies in the state. We operate an information center on conservation issues and a lobbying office in Boise. We are currently working on two environmental education projects -- the previously mentioned Agricultural Lands Project and an Energy Conservation Project funded by the Federal Energy Administration through the Idaho Energy Office.

The Agricultural Lands Project's general objectives are (a) to create a common ground for communication and possible co-operative action between farmer/ranchers and conservationists and (b) to find and summarize relevant data on agricultural practices and their various impacts. This last would include the entry into production of Federal land, loss of "prime" agricultural land to urban sprawl, energy consumption of Idaho farms, trends in ownership, and so on.

From the above it can be seen that the primary target audience for both research and dissemination of results is the farmer. We also intend to present the information gained to the general public. The means of dissemination in both cases will be through a statewide conference, tentatively scheduled for late February, 1977, and through general media release. Both the research results and conference conclusions/recommendations will be published in some form and released. However, the actual nature of that publication has yet to be decided.

Funding is primarily through the H.E.W. "mini-grant" although sources of additional funding are being pursued. The total budget for the project, including the most promising additional source and "in-kind" donations would be in the range of $26,000.

Evaluations of the project will be basically "in-house", although some evaluation will be undertaken for the grantors and be included in the publication. Additionally, the participants at the conference will evaluate our efforts as a part of the conference format, giving us some immediate feedback.

In the future, we may take knowledge gained from this project and apply for certain funds in order to produce an audio-visual presentation. At this point, however, we are not completely sure of our plans in this direction.

---Terry Myers
September 1976

ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACTS OF NATURAL GAS SHORTAGES

Catherine Huther, Project Director; Judith Groves, Executive Director, Illinois Environmental Council, 407½ East Adams, Springfield, Illinois 62701; (217)544-5954.

The Illinois Environmental Council, under a mini-grant from the Environmental Education Office, will be presenting a series of workshops in five locations in the state of Illinois in early 1977. The subject will be "Economic, Environmental and Social Impacts of Natural Gas Shortages." The purpose of these workshops will be to address the problem of potential shortages in natural gas supplies in Illinois what alternative solutions are available to citizens, industry and agriculture and what are the consequences of those alternatives.

We hope these questions will be addressed not only by utility and government representatives but also by industry, agriculture, small businessmen, environmentalists, consumers, senior citizens, low income groups and the public at large. In an effort to bring together all these groups and elicit opinions and information from them, the mechanism of the nominal group process will be used for part of the day. Through this method we hope to actively involve a wide spectrum of each community.

Production of resource materials is underway at present. We expect to have a slide show with script developed as a background presentation for each workshop.

---Catherine Huther
October 1976

PRIDE

Thomas F. Kibler, Director; Indiana Energy Office, Room 803, State Office Building, Indiana Department of Commerce, Indianapolis, Indiana 46204.

PRIDE (not an acronym) provides state-wide coordination of conservation programs, promotes and expands individual and corporate conservation efforts, and recognizes the achievement of desirable conservation goals.

PRIDE also provides the guidance for implementing conservation programs in various areas of endeavors and is prepared to assist conservation groups in their activities.

PRIDE was adopted in 1973 following the oil embargo and at that time stood for "Partners in Reducing Indiana's Deficiency of Energy". It was the official program of the State of Indiana to bring the energy conservation message to its people and marshal public support of the need for energy conservation.

Following its adoption, a State Pride Committee was named by Governor Bowen with Lieutenant Governor Orr as Chairman. The makeup of the committee included all segments of the private sector such as labor, industry, the Indiana State Chamber of Commerce, Farm Bureau, and the Commercial Executive Association which represented local chambers of commerce throughout the state. A public relations sub-committee was also formed. Donated time, materials and services were obtained wherever possible.

State-wide response was good and entire communities were committing themselves to energy conservation and taking actions to ensure it. Once the embargo was lifted though, and the public could buy all the gasoline they wanted, interest waned. The need for conservation was still there but the public seemed to relate to "crisis" situations and expressed a general disbelief of an "energy shortage".

In January '75 PRIDE was reorganized by Governor Bowen to be all inclusive of conservation in its broadest sense. Conservation of energy and natural resources was no longer an acronym but now stood for the dictionary definition of the way one feels when you accomplish something and no one's made you do it.

The expanded role of PRIDE was to create "Conservation Partners" throughout the state, organize new programs where none existed and assist the efforts of the programs presently in place.

The Indiana Energy Office of the Indiana Department of Commerce was given the task of implementing PRIDE. A coordinator was hired, and with the staff of the Energy Office and Public Information Department of the Department of Commerce, a refined PRIDE program was developed with accompanying pamphlets and a slide presentation.

Examples of PRIDE progams are as follows:

1. FEA...Commercial and Industrial: This program can be utilized to conserve energy in commercial, public and industrial buildings. A number of specific actions are included. (Federal Energy Administration - Indiana Energy Office).

2. Adopt a Park: Civic and private groups assist with the responsibility for maintenance, upkeep and improvement of a local park. (Department of Natural Resources).

3. Community Park Clean Up and Nature Trail Development: This program is designed to improve park facilities through clean-up, identification of trees, flowers, grass, and to develop a nature trail, using existing facilities within the park. (Department of Natural Resources).

4. Keep America Beautiful - Keep Indiana Beautiful: A program that encourages the clean-up and beautification of the Hoosier State. (Governor's Office of Voluntary Action - Environmental Quality Control, Inc.).

5. Pitch-In: Provides broad information for encouragement of an anti-litter ethic. (National Brewers Association).

6. Plant a Tree: A program developed to increase public awareness of the economic and aesthetic values of our forests. (Arbor Day Celebration).

7. Vacant Property Clean-up: This program is designed to improve the physical appearance of an unused or vacant portion of land through clean-up and green-up to create a mini-park where city property is involved. (H.U.D. - Department of Natural Resources).

8. Energy Management for Indiana Agriculture: This program will concentrate on areas of agricultural production that offer sizeable potential for reduction in energy and production costs, without associated losses in productivity or product quality. (Cooperative Extension Service - Purdue University).

PRIDE is so flexible that each community can take whatever concept they like and adapt it to their own community needs. We are then ready to assist the community with speakers, films, informational pamphlets and seek out expertise as needed.

If a community has an established and developed program of their own, we can still assist them and the community can use our awards if they so desire.

Since the fall of '75, about ninety PRIDE presentations and speeches have been made. Supplies of information materials have been sent, and quantities of the FEA education pamphlets "Energy Activities with the Energy Ant" and "Energy Activities for Young People" have been requested for the schools and communities contacted. The PRIDE coordinator has conducted workshops on conservation during conferences sponsored by the Governor's Office of Voluntary Action. PRIDE has co-sponsored, with several community chambers of commerce, workshops on Energy and/or Environmental Conservation. PRIDE coordinated federal, state, local and private sector experts for these workshops which were provided at no cost to the community. PRIDE has co-sponsored with five chambers of commerce major "clean-ups".

The award factors are an integral part of the PRIDE program.

The Robert C. Morris Memorial Citation will be given only to those individuals or organizations who have expended outstanding efforts and achieved measurable results. These citations will be presented by the Governor only after deliberation by the selection committee. Four of the awards have been presented.

The PRIDE Community Award is designed to recognize individuals and organizations who have put forth real efforts to achieve the establishment of a conservation ethic on a local level. The PRIDE Community Award will be presented to 180 individuals and organizations.

The PRIDE Recognition Award is basically the same as the PRIDE Community Award except it is presented by the Indiana Energy Office to deserving individuals and organizations. The office has presented three of these awards.

Though results aren't always measurable, it appears that the communities are using the PRIDE program in varying degrees and successfully adapting it to suit their individual needs and priorities. These "grass root" community efforts are the necessary groundwork that should make people aware of the need for conservation and the practical and realistic methods available to implement it. One of the most exciting aspects of the PRIDE program is working with the schools and "their children". The dedicated educators are truly concerned about the environment, energy, and economics as it will affect the children they are educating, and their "childrens' children".

---Thomas F. Kibler
September 1976

MULTIPLE ENVIRONMENTAL LITERACY PROJECT

Dr. Chris Buethe, Director, Multiple Environmental Literacy Project, Indiana State University, Department of Secondary Education, Terre Haute, Indiana 47809; (812)232-6311.

In 1974, a study conducted by Indiana State University under the direction of Dr. Chris Buethe showed that half or more of the Indiana teachers tested were unfamiliar with common environmental terms. Since these Hoosier teachers influence thousands of residents throughout the state, it was evident that an effort should be made to increase the environmental literacy of Indiana teachers.

From this previous evidence the Multiplied Environmental Literacy Project was conceived. Funding for the M.E.L. project was supplied under a grant from the U.S. Office of Education.

The overall purpose of the M.E.L. project is to access the increasing amount of environmental literacy as it desseminates from teachers to students. The initial target audience was the 49 Hoosier science teachers who participated in the project. These teachers ranged over the state of Indiana and included elementary and secondary teachers in general and biological and physical sciences.

Six highly qualified advisor-instructors were chosen on the basis of their relationship to the environmental terms in question. (44 terms were chosen for their significance). These six instructors met with the teachers for two days of intense environmental instruction. During the two seminars, the teachers received instructional kits on environmental education and interacted with fellow teachers regarding their methods of teaching environmental literacy.

Each teacher returned to his school and chose at least two qualified student tutors. Based upon that teacher's accumulated knowledge, the two student tutors were made familar with selected environmental terms. The tutors were then sent to a group of elementary students with the elementary host teacher present and allowed to instruct the elementary pupils and host teacher in regard to the selected environmental terms.

To evaluate the multiplying effect of the environmental literacy knowledge, a pre-test was given to each level or group. After instruction, a post-test was given to access the amount of environmental literacy increase. The results of these tests are expected to be published in The Journal of Research in Science Teaching and The Hoosier Science Teacher.

Related programs along the M.E.L. guidelines have already begun on the local level. Some teachers have expressed interest in continuing research and developing methods of instruction for environmental terms. Methods of instruction and audio-visual materials designed to enhance environmental literacy can be obtained from Dr. Buethe's office.

---Jerry D. Brown
Graduate Assistant
October 1976

PROJECT ECO - AN ENVIRONMENTAL CURRICULUM OPPORTUNITY

Dr. Luther Kiser, Director; Assistant Superintendent for Curriculum and Instruction, Ames Community School District, 120 South Kellogg, Ames, Iowa 50010; (414)232-3400.

Project ECO, which has received Educational Pacesetter Awards from the PNAC, was validated during the 1972-73 school year through the Identification/Validation/Dissemination process sponsored by the U.S. Office of Education. The Project was adjudged innovative, successful in its mission, cost-effective and appropriate for adoption/adaption in other school districts. This validation, together with the three years' experience on the part of the Project ECO staff in in-service teacher training both with the regular Project program and with a National Science Foundation-funded series of environmental education teacher workshops, led to further Federal funding to serve as a developer-demonstration model.

The specific developer-demonstration Project had two major levels of activities: a) training and support activities with two "adopter/adapter" school districts in central Iowa; and b) activities to bring other school districts in Iowa and the nation to an awareness level which identified other potential adopter/adapter districts for the school year 1975-76.

Level One activities consisted of a series of workshops and inter-district visitations between Project staff and participants which started in August 1974, continuing during the school year 1974-75, and culminating with a workshop in June 1975. At the conclusion of these activities, the adopter/adapter districts had a written outline of the environmental education curriculum specific for that community, a plan for putting the curriculum into effect, and a trained cadre of six staff members who could direct the in-service development of other teachers in the district and who could provide continued support for program development.

Level Two activities centered on dissemination to both local and national interests in an effort to make others aware of the potential of such teacher in-service training in the area of environmental education.

Level One activities continued in the program during the past two years have caused interest to grow and workshops conducted in the immediate area and throughout the state have continued to draw large numbers of participants. At the present time two workshops are being offered for re-certification credit to area teachers and administrators in curriculum development.

Level Two activities will continue to center on dissemination to both local and national interests.

---Ken Frazier
Project Coordinator
October 1976

CONSERVATION EDUCATION CENTER

Robert P. Rye, Jr., Administrator; Conservation Education Center, Route 1, Box 44, Guthrie Center, Iowa 50115.

Iowa Conservation Commission's Conservation Education Center is located adjacent to Springbrook State Park in Guthrie County. Operation began in spring of 1971. There are six full-time and five part-time employees.

The overall purpose is teaching conservation and wise use of natural resources. Specifically: to instruct the visitors and program participants in the wise use of resources, natural and man-made; to develop in natural settings within each individual a concern, awareness, and interest in the environment as a whole through direct experience; to build within each individual an environmental ethic and a resolve to seek solutions to problems confronting man through direct experience; to show interrelationships and interdependency between man and the natural world; to provide a setting and facility for learning conservation and conservation education; to promote, build, support, and publicize Iowa Conservation Commission programs, objectives and policies; to act as a center for the sharing of ideas, information, training, research, and enjoyment for the lay public, school, colleges, conservation-oriented groups and in-service training for the Iowa Conservation Commission personnel.

Materials produced consist of class handouts, slide programs, lesson plans and programs used at the Center and shared with teachers using the Center. These are used and modified to reach all age levels. The programs range from one to ten days in length and the Conservation Education Center is open year-round. Consultant services are available for teachers and others so desiring.

The existing modern brick facilities consist of two dormitories, a dining hall, a maintenance building and classroom-office building. Within these are a library; a display room containing mounted animals, rocks, invertebrates, artifacts, bird nests and eggs, and wool; and laboratory areas. Use is made of streams, a lake, lagoons, prairie, forests, and three miles of nature trails, located around the Center's facilities.

One additional dormitory is presently under construction at the Center. An outdoor classroom is currently being developed to augment the existing natural surroundings of 850 acres. This classroom consists of a soil conservation practices area including ponds, terraces, waterways; a native grass area; an arboretum with a blind trail; a wildlife plantings section; and nature trails throughout the newly developed area.

---Robert P. Rye Jr.
October 1976

ENVIRONMENTAL INFORMATION DISSEMINATION

Dr. Jerry F. Howell, Jr., Director, Center for Environmental Studies,
UPO 780, Morehead State University, Morehead, Kentucky 40351;
(606)783-3328.

Since July, 1974, the Center for Environmental Studies has expanded and continued to carry out programs originally funded by the Office of Environmental Education, Department of Health, Education and Welfare. The present functions of the Center are to:

1. Disseminate environmental education information to regional schools, groups, organizations and libraries.
2. Promote teacher pre-service and in-service education through workshops and formal classes.
3. Assist the Kentucky Department of Education and the Kentucky Environmental Education Advisory Committee in its work with environmental education.
4. Propose and promote student-originated studies concerned with the environment.
5. Maintain the presently healthy academic majors and minors enrolled at the University.
6. Act as a regional clearinghouse for environmental information and resources.

Although some minor professional articles have been published concerning past grants, the major publication of the Center, co-authored by Dr. Jerry F. Howell, Jr., and Ms. Jeanne Osborne, remains the November, 1975 book, *A Selected and Annotated Environmental Education Bibliography for Elementary, Secondary and Post-Secondary Schools.* This 344-page book has seen wide usage; it has been purchased by about 500 school systems, libraries, and public agencies. It is available for $3.25 postpaid ($3.00 each for orders of 10 or more). Purchase orders, checks, or money orders should be made payable to Morehead State University, but mailed to Dr. Howell at his above address. The book is divided into colored paper sections (K-6, 7-9, 10-14), each representing an ecological subject. There is also a directory of publisher addresses, along with names and addresses of citizen organizations, governmental agencies and professional groups. The book will probably be revised and updated in 1978.

---Jerry Howell
October 1976

ENVIRONMENTAL ENERGY EDUCATION PROJECT, MAINE AUDUBON SOCIETY

Jonathan W. Gorham, E.E.E.P. Director, Maine Audubon Society, Gilsland Farm, 118 Old Route One, Falmouth, Maine 04105; (207)781-2330.

The purpose of the Environmental Energy Education Project is to equip builders, bankers and high school teachers with the skills and information necessary to further the implementation of alternate sources of energy through their professions. The project stresses community education programs aimed at the present road blocks in the delivery of energy-efficient housing:

1. The lack of skills in the building trades to use alternate energy in residential construction.
2. The reluctance of financial institutions to explore the funding of innovative housing design.
3. The lack of alternate energy training opportunities in existing educational institutions such as high schools and vocational schools.

The major goals of this project are:

1. To prepare science teachers and environmental educators of all levels with the information and teaching materials to present the practical use of energy from alternate sources such as the sun, wind, wood and waste disposal systems as an integral part of any science program.
2. To introduce high school industrial shop teachers and vocational instructors to the level of expertise required in the construction of alternate energy components such as composting toilets, wood furnaces, and solar collectors. The intention of this program is to equip students with the plumbing, carpentry, and wiring skills required in the installation and repair of alternate energy equipment.
3. To introduce, through a series of technical workshops presented to members of the building trades, the skills and information prerequisite to construction and installation of alternate energy components. The intent of this aspect of the project is to insure the availability of trained tradespeople experienced in the installation and on-site construction of alternate energy equipment.
4. To demonstrate to representatives of the state's lending insitutions the workability of alternate heating systems in residential housing, thus addressing reluctance of such organizations to make funds available for the construction of these houses. This program will examine the questions of component durability, building integrity, the economics of heating and construction and resalability, with the intention of reducing the uncertainties that surround the funding of energy efficient construction.

5. To ensure that the information prepared for presentation in the above programs is available beyond the individual workshop program. This will be accomplished through the compilation of a curriculum guide for environmental educators and an alternate energy source book for both building and banking industries.

The implementation of this project will complement activities in this area already underway at Maine Audubon. The new headquarters of Maine Audubon, scheduled for completion in June, will be the first alternately heated building in Maine to be open to the public and the first building in the nation to make use of an integrated solar and wood-heat system to supply the entire heating load. With this facility as a teaching tool to show building techniques and installation of the heating systems, Maine Audubon will be fully equipped to educate potential builders to the incorporation of alternate energy components into housing design and construction.

In addition, the Maine Audubon Alternate Energy Network is an existing program set up to handle requests for information about the new headquarters and alternate energy in general and to serve as a center for information about the development of alternate energy in Maine. In October 1975 Maine Audubon drew together many of its personnel resources from throughout New England to sponsor a day-long conference to address the use of alternate energies in home building. Over 2500 participants gathered to view 13 workshops and 25 exhibits designed to introduce homeowners to the current state of alternate energy technology.

---Jonathan W. Gorham
November 1976

SUGARLOAF REGIONAL TRAILS

Frederick Gutheim, Project Director; Sugarloaf Regional Trails, Box 87,
Stronghold, Inc., Dickerson, Maryland 20753; (301)926-4510.

Sugarloaf Regional Trails is a professional planning and environmental education organization with headquarters at Sugar Loaf Mountain on the border of Montgomery and Frederick Counties, Maryland. It is sponsored by the Sugarloaf Citizens Association, Inc., a non-profit entity of about 250 members, representing the residents of upper western Montgomery County, and by Stronghold, Inc., trustees for the 3,000-acre Sugar Loaf Mountain Park on the Montgomery-Frederick County border.

Since its formation in 1974, Sugarloaf Regional Trails (SRT) has specialized in projects involving the extensive use of volunteers for research and planning activities. It produced an Inventory of Historic Sites, historic theme trail guides, proposals for a trail system throughout western Montgomery County, and a guide for citizens groups wanting to conduct similar activities. Fifteen thousand copies of the eight trail guides have been published. It has developed and run conferences and field trips. Funding for this work has come from grants from the National Endowment for the Arts, the Montgomery County Planning Board, and the Maryland Committee for the Humanities and Public Policy. The goal of Sugarloaf Regional Trails' work is to contribute to an appreciation of the region's unique resources through planning, historic interpretation and environmental educational activities.

SRT-HEW Environmental Education Project:

The Sugarloaf Regional Trails Environmental Education Mini-grant from HEW, "Citizens Workshops on the Montgomery County Environment" met a widely perceived need in Montgomery County -- to broaden the base of effective and knowledgeable citizen action on environmental issues. Although there are over 400 citizen associations in Montgomery County, only about one-fifth of them are active, and only a handful deal effectively with County-wide environmental issues. The SRT proposal to HEW developed three objectives to meet this need:

1. To pool the experience and approaches of environmental and civic group leaders in Montgomery County, focusing on land use issues -- their causes, effects, and alternative solutions.

2. To help citizens understand and evaluate alternative approaches to County-wide environmental problems through field workshops and other innovative instruction techniques.

3. To disseminate to other groups and localities the planning and environmental experience gained by the SCA.

Structuring the Project:

In order to gain the interest and cooperation of the most active civic groups, the initial step was to identify knowledgeable County civic leaders and to determine what environmental issues they felt should be addressed in the workshops. About 50 civic leaders were identified and 12 selected to attend an "Advisory Group" planning meeting. The meeting's concensus was: a) that a conference to broaden the perspectives of local civic leaders is needed; b) that nothing like our proposal had been done before in the County; c) that an environmental education conference format would be most successful; d) that SRT should not count on too much sophistication from local civic associations; d) that local citizens associations lack continuity and need tools to train their members; e) that this conference should be the first of a series of annual conferences; f) that an environmental action handbook planned by the project staff would be useful. The basic structure of the project's work, planning and running a conference and field trip and preparing supporting materials, was decided at that meeting.

Next, a three-member volunteer Planning Committee was chosen. It worked closely with the SRT Staff Director in developing the conference's agenda and in selecting speakers. For the first year's conference, it was decided to focus on the Montgomery County General Plan and its relation to past and present environmental planning. The field trip was designed to illustrate visually the concepts and issues discussed at the conference.

Program, Materials and Evaluation:

Invitations were mailed to 408 County civic and environmental groups, asking for one representative who would later report to his group about what he learned at the conference and field trip. Representatives of over 60 groups attended the conference, and 40 attended the field trip. Both were highly successful.

Materials produced by the project included:

1. "Tools for Environmental Action, A Bibliography", compiled in cooperation with the Montgomery County Public Libraries.

2. A booklet of sketch maps on the "County Environment": the Year 2000 Plan for the Nation's Capital; the geology of Montgomery County; the County's water supply system and sewage treatment plant locations; its sludge and solid waste disposal sites; open space "wedges" and sewered areas; major stream basins and sewage basins.

3. A Roster of Resource Persons on County Environmental Problems -- citizens who are experts in the fields of: air pollution; noise pollution; land use planning; parks and open space; solid disposal and treatment systems; water supply; water quality and water pollution; procedural matters; economic aspects of environmental problems; and energy.

4. A Field Trip Packet which will enable the civic group representatives to repeat all or part of the field trip for their local civic associations.

A contractural arrangement with an independent evaluator insured an objective appraisal of the Conference and Field Trip and of SRT's success in meeting its goals. SRT's staff and the evaluator together developed an evaluation questionnaire for conference participants, and the evaluator randomly interviewed some participants, as well.

In evaluating the SRT Environmental Workshop from three perspectives, a) the degree to which the Workshop fulfilled the objectives which its planners set for it; b) the reactions of the participants in the Workshop; c) the degree to which the Workshop succeeded in meeting a real need in the Montgomery County community, the evaluator stated:

> At the outset let it be said that Sugarloaf Regional Trails deserves commendation from all three perspectives. It did a reasonable job in fulfilling the objectives set by the planners; the reactions of the participants were in general highly favorable; and the Workshop was a uniquely successful effort to meet what is a very real and a very widely perceived need in the Montgomery County community. The problems which the Workshop encountered, and there were several, were virtually inevitable in view of the nature of the task and the lack of precedent in this particular kind of enterprise. While there are potential problems for the Workshop if it becomes, as indeed it should, a continuing event, it also holds tremendous promise... SRT should be encouraged to undertake additional field programs, particularly if they can be executed with the virtually flawless logistics and obviously knowledgeable planning which characterized the September 1976 trip....
> "Evaluation of SRT Environmental Workshops, June/September, 1976" - by Lucille Harrigan, pp. 21, 32 of SRT Final Report to HEW.

The Evaluation was incorporated into SRT's Final Report to HEW. The evaluator felt that "one of the directions in which the SRT Workshops might usefully develop is toward becoming a community forum which provides the setting for a meaningful dialog between citizens and government officials and technicians". (Harrigan Evaluation, p. 28, SRT Report to HEW).

The Sugarloaf Regional Trails Final Report to HEW (Mini-grant G00-7500686) September 1976, 50 pp., is available to interested organizations for the cost of Xeroxing and mailing.

Sugarloaf Regional Trails Project Staff: Frederick Gutheim, Project Director; Gail C. Rothrock, Staff Director; Edwin F. Wesely, Consultant; Lucille Harrigan, Evaluator; Sigmund Berkman, Jesse Maury, Herbert O'Connor, Citizen Planning Committee.

Sugarloaf Regional Trails Executive Committee: Frederick Gutheim, Chairman; Donald A. McCormack, Stronghold, Inc.; Rex L. Sturm, Sugarloaf Citizens Association, Inc.

---Gail C. Rothrock
October 1976

RHODE RIVER EDUCATION PROJECT

Sandra K. Fuller, Program Coordinator; Associate Director, YMCA Camp Letts, P.O. Box 208, Edgewater, Maryland 21307; (301)261-4286.

Overall Purposes:

To overcome the effects of cultural and geographical isolation through interracial and intercultural activities in environmental awareness and understanding.

Specific Objectives:

1. To enable participants to experience and recognize natural phenomena that commonly exist in rural, suburban, and urban environments.
2. To assist participants in developing a personal understanding of the interrelationships of the natural world and social institutions.
3. To help participants relate to each other and to teachers and staff in a spirit of cooperation based on a common new experience and situation requiring and examining interdependence.
4. To assist participants in examining their personal and cultural values which govern their relationship to the environment.
5. To provide a positive environmental education experience which students find rewarding and enjoyable.

Target Audience:

High school students (currently serve 10th grade Biology and Earth Science students from District of Columbia Public Schools).

Methodologies:

The program of the Rhode River Education Project is broken into four basic components. Monday is devoted to bringing students into the camp environment and introducing them to the systems of the Camp and the Rhode River. Tuesday is generally devoted to the study of natural systems in the area. On Wednesday, students study human systems, and the interrelationships of human and natural systems. Thursday is used as a time for preparing students for their return to the city, and to encourage them to continue exploring the environment at home and at school.

Students generally work in groups of six to eight people, except in activities designed to provide common experiences to all students. Evening activities, orientations and synthesis involve the total group. The small groups allow students to make new friends, and to take an active role in their education.

On Tuesday and Wednesday, students are broken into four or five workgroups to study a specific aspect of the "natural" environment, and to study man's relation to that area. Resource allocation and management is used as the main theme for the week. This theme is broken into the components of earth, air, energy and water for work groups. Students work together in their groups Tuesday and Wednesday, sharing their experiences with the rest of the group on Wednesday evening in a synthesis session. The synthesis reinforces the idea that each student has only studied one aspect of the environment. Also it provides exposure to experiences of the other groups.

Follow-up is probably the most important part of the Rhode River Project. The basic program can provide some background to the environment for a limited number of students. The follow-up program can provide resources and information for a virtually unlimited number of students to study the environment to whatever depth they can take it, in whatever areas they want to work in.

Materials Produced:

1. The Camp Letts Nature Trail Guide (Booklet)
2. The Systems Concept (mimeo - 2 pp.)

Funding Sources:

1. U.S. Office of Education - Emergency School Aid Act - Basic Non-Profit Grant

2. Eugene and Agnes Meyer Foundation - Construction Grant

3. The Ross Foundation - Program Expansion Grant

Evaluation:

Annual reports to the U.S. Office of Education.

---Sandra K. Fuller
October 1976

ENVIRONMENTAL EDUCATION LAND USE PROJECT

Lowell E. Bender, Director, Continuing Education, Garrett Community College, McHenry, Maryland 21541; (301)387-6666 or (301)245-2181.

Background:

Here in Maryland's westernmost county the forces of exploitation and of environmental conservation are clashing, with conservation having a better-than-average chance of winning.

Our county has only 22,000 people scattered over 662 square miles. Principal employment sources are recreation-related services and construction, governmental infrastructure, agriculture, and some light industry recently attracted by our labor supply and clean water. Unemployment rates are chronically high, leading to a continuing drain of the more ambitious young to the cities.

Several new factors are about to affect our equilibrium. A long-awaited highway will, in 1976, improve access to and from Washington, Baltimore, Pittsburg, and Morgantown. This is expected to improve marketability of the products of our farms and forests, and more importantly, attract more metropolitan area residents to the wholesome recreation to be found in our environment.

Secondly, a massive shift to coal as an energy source has already brought a boom in strip mining. Current state mining regulation is almost as strict as the legislation twice passed by the Congress; it seems probable that, whatever the outcome of continued Federal regulatory effort, local mining will flourish.

Finally, there are visible stirrings of concern on the part of our small Amish communities. For years these hardworking farmers have lived within their own neighborhoods, asking only tolerance from the political community. When the constraints from suburban expansion or whatever became too confining, their custom was to sell out and move on. Now they have found that there are few if any places of further refuge within our county, and several observers have noted the possibility that they may be ready to move toward participation in the larger community as a vehicle for maintaining their way of life.

These factors may resolve themselves in random fashion, or, preferably, under the influence of a conscious process, be directed toward mutually agreed upon goals.

The project would attempt a community education process reaching beyond the county "establishment" into the hills and hollows where people will take action only when they feel their action can make a difference.

The Problem:

Simply stated, the problem is coping with change. Pressures for change, arising chiefly from outside the community, are threatening the community's traditional rural values. Both attitudinally and organizationally, the community is not fully prepared to deal effectively with these pressures. The overall need, then, is to assist the community, through its individual members, to move beyond merely coping with change and toward the effective management of change.

The Goals and Objectives:

Goal 1: Achieve greater breadth and depth of awareness among the general public regarding the current and imminent forces of change affecting the community as they relate to the use of rural land.

A relative minority of the county's adults (the better-educated, more world-wise) already are aware of the change factors and are capable of protecting their own interests; these persons are the ones who would be most likely to participate in such a program (ideally, as discussion group coordinators). The stated goal, however, requires that we encompass more than this community leadership element. We are seeking active involvement by at least three hundred persons; ultimately, their informal communications with friends and neighbors would spread the program's information among most of the rural adult population.

The more specific objectives under this goal include:

a. Collect information about our existing environmental qualities and resources.
b. Identify the options for future use and/or preservation of these resources, including the various short-term and long-range environmental effects and trade-offs (physical, economic and social).
c. Determine individual and community attitudes about these optional uses and consequences.
d. Attempt to achieve consensus about the most desirable of the options (including priorities, as applicable).

Goal 2: Overcome opposition, arising from traditional rural individualism, toward "planning" as a community function by demonstrating the ways through which the planning process can be open for effective, substantive public participation.

Regardless of community sentiment, the County government is legally required to conduct long-range comprehensive planning. The County government also is philosophically committed to opportunities to achieve this. With the County's willing participation, it should be possible not only to show the citizens how to express their individual and group views on environmental and developmental issues, but also to demonstrate that their views will be seriously considered.

Objectives towards this end include:

a. Explaining the legal and administrative aspects of the state and local land use planning processes affecting the County.
b. Identifying existing and potential points in the decision-making process at which public participation (formal/informal, individual/group) would make the most effective contribution.
c. Providing experience (through the neighborhood workshops) in the personal aspects of expressing views and working toward consensus.
d. Achieving governmental action on one or more of the group positions developed under Goal 1.

The Approach:

Using "land use" as its theme, and neighborhood discussion and consensus as the prevailing mode, project elements would be:

1. Selection of fifteen community coordinators. Selection criteria include community acceptance, committment to participatory methods, and flexibility. Amount of formal education and "success" would not be important, per se.

2. Development by these coordinators of a program for achieving project objectives. No doubt this program will require a number of "expert" resource people from time to time--both technical and facilitating.

3. Execution of the program through a series of neighborhood meetings, with experts on-tap. Early feedback will be important. There would be at least two sponsored meetings in each of 15 neighborhoods, with the expectation that this will spark many more informal sessions. A typical sponsored meeting would be preceded by a simple meal--church-supper type--served by a local group. The coordinator would introduce the topic, aided by the resource person, and would stimulate the group to develop its views on land care, and to recommend specific action steps.

4. As neighborhood views begin to coalesce, one or more county-wide meetings will probably be indicated; the product of such a meeting could be a position paper plus an organizing mechanism for public participation in the county planning process.

Benefits:

If successful, this program will produce not only a numerically-significant group of environmentally-informed citizens, but will also equip these citizens with the practical social and political skills to assure that their views can be expressed in a way that will be heard. We envision this as the beginning of an on-going process. We hope that these 300 citizens, together with others who may be attracted by their success, will remain active in keeping themselves informed and in participating in the decision processes. We also intend to document the results of this program so that its successful techniques may be tried elsewheres (and its pitfalls, if any, avoided).

This project has been funded under a P.L. 93-278 mini-grant.

---Lowell E. Bender
October 1976

HATHEWAY ENVIRONMENTAL EDUCATION INSTITUTE

Charles E. Roth, Director of Education, Hatheway Environmental Education Institute, Massachusetts Audubon Society, Lincoln, Massachusetts 01773; (617)259-9500.

Purpose:

To improve environmental education within the Commonwealth of Massachusetts for all age levels.

Specific Objectives:

1. Upgrade the environmental knowledge and skills of in-service teachers.
2. Provide out-of-school environmental education activities for school-age youngsters.
3. Provide continuing education opportunities in environmental awareness and understanding for adults.
4. Assist state and federal agencies in institutionalizing environmental education in the formal schooling structures.
5. Provide direct educational experiences in the environment for both adults and youth.

Target Audiences:

In-service teachers and youth leaders; general adults with emphasis on "leaders and decision-makers"; children.

Methodologies:

Our emphasis is in staff development and in-service training through workshops, consulting, materials development and a comprehensive resource center. Each approach is tailored to the specific situation.

Materials Produced:

The small brochure "Zero-In on Environmental Education", available on request, lists some of the materials available from us; however, much of our time is devoted to putting the materials already developed by others actually into use.

Funding Sources:

We have some private foundation money to cover our down time but our basic approach is to be essentially self-supporting through realistic fees for services rendered.

Plans for the Future:

Current and future efforts are focused on more long term (3-5 years) staff development with schools to achieve environmental education fully integrated into the system with a critical mass of teachers who can keep the efforts functioning and growing over many years. Also we are looking to expanded growth of our environmental education teacher center run by and for classroom teachers. A third major project is final development and implementation of an out-of-school youth club program we are calling "Spaceship Earth Clubs".

---Charles E. Roth
November 1976

MILL CREEK BASIN STUDY

Dr. William D. Yerkes, Research Director; Phillip C. Nunn, Research Coordinator; Grand Valley State Colleges, Urban and Environmental Studies Institute, Allendale, Michigan 49401; (616)895-6611.

In mid-1974 Michigan State University initiated the Mill Creek project as a portion of the International Joint Commission study of the Great Lakes pollution as related to surrounding land uses. In the spring of 1975, Grand Valley State Colleges was invited to join the Mill Creek Basin study to locally perform the field work. Funding has been provided by the U. S. Environmental Protection Agency, via Michigan State University. From April, 1975 through June, 1976 Grand Valley students and faculty accomplished the following:

> Planned and organized field studies, established Basin monitoring stations, obtained landowners' permission for access to station sites, collected samples, took measurements, serviced field instruments, performed laboratory analyses, provided data to Michigan State University and developed a local computerized data bank.

Grand Valley's approach to the project was principally to meaningfully involve undergraduate faculty and students in an on-going large-scale environmental research project. During the year of involvement, this objective and the requirement for dependable quality performance were well-served. Grand Valley started with three faculty advisers and ten students on the project monitoring eight stations. At the peak of activity in the basin, the work force had expanded to three field crews working 40 active stations and a fully operating water laboratory. In addition to the students who gained field experience by working on the project, approximately 100 undergraduate students were exposed to environmental field work through classes which used the Basin and the Project as an educational resource.

Grand Valley's activities in support of Michigan State's project terminated in June, 1976 due to insufficient funds for continuation. Involvement in the Mill Creek Study has opened new dimensions for environmental science education and efforts are being made to continue using the Mill Creek Basin as an education and research resource.

The one year of activity by Grand Valley in the Mill Creek Basin is represented by:

1. 66 stations established and used for data collection;
2. More than 100 undergraduate Environmental Science students provided an exposure to field research which they otherwise would not had;
3. Establishment of a computerized data bank to organize more than 10,000 separate data items for systematic retrieval;

4. Initiation of analysis of Mill Creek Basin data by students, a scientific activity not usually performed by undergraduate students.

The 66 monitoring stations in the Mill Creek Basin were each established to measure a specific set of parameters; therefore, they were categorized as:

17 Biological Testing Stations
2 Recording Stream Gage Stations (MSU)
24 Water Quality Stations
4 Recording Weather Stations
14 Stream Staff Gage Stations
5 Non-recording Weather Stations

A copy of the Mill Creek Basin Project Final Report is available for $5.00 from the director of the Urban and Environmental Studies Institute.

---Philip C. Nunn
October 1976

NATIONAL ASSOCIATION FOR ENVIRONMENTAL EDUCATION

The National Association for Environmental Education (NAEE) is a rapidly growing professional association that has the following stated purposes:

1. To promote and coordinate environmental education programs and activities within and among all educational institutions;
2. To disseminate information about environmental education programs for such educational institutions;
3. To assist in the development of programs and to serve as a pool of resources for such development;
4. To foster sharing of information about environmental education programs among institutions and individual members of the Association and to promote communication about environmental education; and
5. To foster research and evaluation activities and programs in relation to environmental education.

Membership categories are as follows:

1. Sustaining membership (non-voting)
   companies, foundations, institutions, associations, or individuals
2. Contributing membership (non-voting)
   companies
3. Individual membership (voting)

Membership is open to individuals, institutions and similar organizations. Sustaining and contributing membership (non-voting status) is open to companies, foundations, institutions, associations and/or individuals. Individual (voting status) membership is open to administrators, faculty, staff, and students associated with both member and nonmember educational institutions or state or provincial offices of environmental education.

The Association is governed by a Board of Directors elected by the membership and a President, President-elect, and an Executive Director. The officers for 1977-78 are:

President: Dr. James Gallagher, Director
Science & Math Teaching Center
Michigan State University
McDonel Hall
East Lansing, MI 48824

President-elect: Dr. Robert Marlett
Texas Tech University
Department of PALA
Lubbock, TX 79409

Executive Director: Dr. Robert H. McCabe
Executive Vice President
Miami-Dade Community College
11011 S.W. 104 Street
Miami, FL 33176

An annual conference is held, usually during the fourth week in April, for the entire membership during which time a wide variety of presentations, papers, and workshops are given on topics ranging from program models to evaluative strategies in environmental education. Selected papers from the conference are published in cooperation with ERIC/SMEAC entitled, Current Issues in Environmental Education, and are distributed to the membership.

Products and services for the membership include: six newsletters, a copy of Current Issues in Environmental Education, reduced subscription rates to either the Journal of Environmental Education or EE Report, and a low cost life insurance program. The Association presently has over 500 members and is growing significantly.

DISCOVERY THROUGH OUTDOOR EDUCATION

Kristy Kaherl, Project Coordinator; Macomb Intermediate School District, 44001 Garfield Road, Mount Clemens, Michigan 48043; (313)286-8800.

In the fall of 1971 the "Discovery Through Outdoor Education" project was begun to serve all special education students (preschool through high school who are qualified for special education). These disabilities include: 1) Blind and Visually Impaired; 2) Deaf and Hearing Impaired; 3) Educable Mentally Impaired; 4) Trainable Mentally Impaired; 5) Day Care; 6) Orthopedic; 7) Emotionally Disturbed; and 8) Learning Disabled.

The major purpose of the project is to establish an experimental model program which would: 1) improve youngsters' achievement in regular school subjects, their self-concepts, interpersonal relationships, and leisure skills; 2) train special education teachers in the utilization of the outdoors for providing learning opportunities to handicapped children; 3) test an outdoor education model for improving the learning and lives of handicapped youngsters; 4) educate and involve parents in the program; 5) utilize high school students as teacher aides for handicapped students.

The general procedure for the attainment of these goals is: 1) involving parents, special education teachers, handicapped youngsters and high school students in project planning, implementation and evaluation; 2) providing outdoor education workshops for teachers, parents and student aides; 3) implementing articulation between learning experiences provided in the outdoors and those provided in the indoor special education classrooms; 4) providing opportunities for handicapped students to have learning experiences in outdoor settings, including resident outdoor school experiences where students and educators will learn and live together 24 hours a day; 5) utilization of various community resources, clubs and organizations which have the potential to contribute to the education of handicapped youngsters.

The project has been validated by the State of Michigan and awarded funds through Title III and Title IV-C for six years, terminating in June 1977.

The "Discovery Through Outdoor Education" project has developed the Discovery™ manual and Discovery ™ sound filmstrip. Available as a set for $35.00, it can best be utilized by teachers and administrators in providing information and a model for adoption of the project concept.

The Discovery™ manual is a 472-page book which describes in detail the procedures to follow when planning an outdoor laboratory experience for special education students.

The Discovery™ sound filmstrip contains four filmstrips and cassettes covering: 1) an overview of outdoor education; 2) the history and philosophy of our program; 3) curriculum concepts; and 4) disability considerations.

---Kristy Kaherl
November 1976

ENVIRONMENTAL CONSERVATION LIBRARY OF MINNESOTA (ECOL)

Julia W. Copeland, Environmental Conservation Librarian; Jo Ann Musumec, Environmental Education Specialist; ECOL, Minneapolis Public Library and Information Center, 300 Nicollet Mall, Minneapolis, Minnesota 55401; (612)373-6637.

The Environmental Conservation Library serves as an environmental information center for Minnesota. A collection of books, pamphlets, government reports, periodicals and other materials is used to provide answers and background information on environmental issues. Materials are loaned throughout the state. Both environmental professionals and the general public are served.

Direct environmental education assistance is provided in three ways:

1. The entire collection provides background information, readings and facts to support EE programs.

2. A separately-shelved collection of EE curricula is available for browsing, and the curricula may be borrowed by Minnesota teachers.

3. Environmental Information Packets are loaned to teachers, students and others on request. Each packet contains 25 to 30 pamphlets, reprints, brochures, etc. on an environmental topic, obtained from a variety of sources. This project was developed with the aid of a U.S.O.E. grant under PL 91-516, and was described in the 1973 edition of the ERIC Directory of Projects and Programs in Environmental Education for Elementary and Secondary Schools.

The library does not produce publications except for a newsletter, but a final report of the packet project is available.

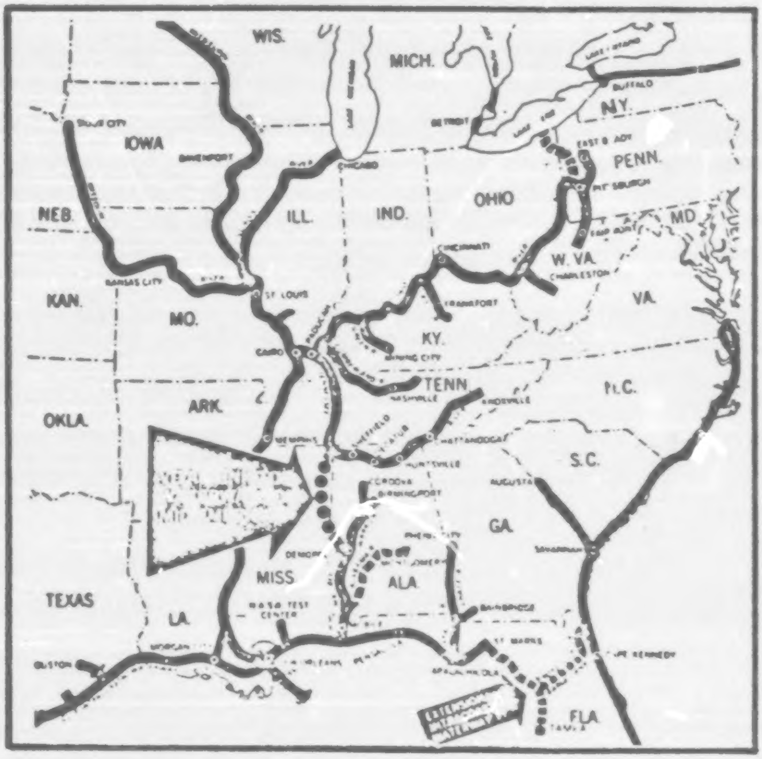
---Julia W. Copeland
October 1976

Three Rivers
Educational Cooperative

319 Main Street - New Albany, Mississippi 38652
Telephone (601) - 534-5001

September 15, 1977

This letter is a report of activities concerning environmental education along the Tennessee-Tombigbee Waterway in northeast Mississippi. These activities began in January, 1976.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GA.
SAVANNAH
MISS.
ALA.
TEXAS
NASA TEST CENTER
LA.
BAINBRIDGE
ST. MARKS
FLA.

This project will tie together 12 great rivers into a single, navigable system linking the Midwest to the Southeastern Gulf and making some inland ports as much as 800 miles closer to the Gulf and foreign markets.

RESA

Serving Schools in Union, Pontotoc, Lee, Monroe, Chickasaw and Itawamba Counties

With the coming of the waterway, educational institutions became concerned about the need for environmental education for people of this area. Three Rivers Educational Cooperative, TVA, and the Tombigbee River Valley Water Management District contacted the Corps of Engineers in Nashville and Mobile to ask for sites and facilities for environmental centers along the waterway.

Three Rivers Educational Cooperative is a regional education service agency incorporating six counties in northeast Mississippi including fourteen school districts. Past funds for operating expenses have come from the Appalachian Regional Commission.

The activities have developed into a regional concept with many agencies involved. Two environmental education centers are being planned at this time. The history of these two facilities is contained in the enclosed reports.

The center to be located at Columbus, Mississippi, will be the first in America built by the Corps of Engineers. Corps costs involve land acquisition and building construction. Non-federal costs include operating and maintenance expense. Mississippi University for Women will be the non-federal sponsor. The name of this center will be the Plymouth Bluff Nature and Cultural Center.

The other center, located on Bay Spring Reservoir will be on a 540 acre site known as Crows Neck. This center will be sponsored by a consortium made up of: Itawamba Junior College, Northeast Mississippi Junior College, University of Mississippi, and Mississippi State University.

Agencies involved include:

1. Mississippi Natural Heritage Program
2. Remote Sensing Laboratory
3. Mississippi Park Commission--Tombigbee State Park
4. Air and Water Pollution Control Commission
5. Bureau of Outdoor Recreation
6. Mississippi Board of Water Commissioners
7. Mississippi Forestry Association
8. Mississippi Forestry Commission
9. Mississippi Game & Fish Commission

10. Mississippi Geological Survey
11. Mississippi Park Commission
12. Mississippi Wildlife Federation
13. Museum of Natural Science
14. Soil Conservation Service
15. State Board of Health
16. State Department of Education
17. U. S. Fish and Wilflife Service
18. U. S. Forest Service
19. Tennessee Valley Authority
20. Tennessee-Tombigbee Waterway Authority
21. Natchez Trace Parkway

The Corps of Engineers has been deeply involved in environmental activities. The Mobile District has formed an environmental board of consultants made up of nationally known individuals. In addition, the Corps moved the site for the Columbus lock and dam to save Plymouth Bluff, a site on the national register. They have agreed to lease 15,000 acres in the divide section to the Mississippi Game and Fish Commission for wildlife enhancement.

TVA's role is to provide an educational environmental specialist coordinator in the valley area to work with the development of these two centers. The environmental staff at Land-Between-the-Lakes is also available to lend valuable technical assistance, and teacher training.

Three Rivers Educational Cooperative has received a grant from the Office of Environmental Education, Dr. Walter Bogan, Director. The grant will be used to develop environmental education resource materials for the centers, using the Tenn-Tom Waterway as its resource. (See attachment).

These facilities will be used by public schools, junior colleges, universities, organized professional groups, and local citizen groups.

This is a total and unified effort to educate all levels of society about environmental problems. Letters of support have been obtained from congressmen, state and local officials, the presidents of the colleges aforementioned, the Board of Institutions of Higher Learning and State Department of Education.

I hope the above information is helpful to you. If you have questions, please contact me at your convenience.

Sincerely,

Hilda L. Hill

Hilda L. Hill
Director

ENVIRONMENTAL EDUCATION TRAINING PROJECT

Project Managers: Peggy Rustige, St. Louis Public Schools, 5101 McRee Avenue, St. Louis, Missouri 63110; Calla Smorodin, Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Missouri 63110. Project Directors: Edward P. Ortleb, Science Supervisor, St. Louis Public Schools; William M. Klein, Assistant Director, Missouri Botanical Garden.

The U.S. Office of Environmental Education has awarded a grant for $57,876 to the St. Louis Public Schools and the Missouri Botanical (Shaw's) Garden to develop a model for training teachers of grades 4, 5, and 6 in a multi-disciplinary, multi-process approach to environmental education. The project is designed to respond to concerns of local and national educators that environmental education programs today present a fragmented approach toward such issues as air and water pollution, urban land use, energy, and wildland conservation. Problems are examined and solutions proposed by specialists in a multitude of agencies, representing the gamut of scientific, social, and aesthetic disciplines. Often these specialists work in isolation from one another with little coordination or concentration of effort toward a problem. Unfortunately, environmental education frequently mirrors this view of the environment as a patchwork of unrelated problems and solutions.

The position of the Environmental Education Training Project is that the environment must be perceived in a much broader view -- one that stresses the interrelationships among all parts of the environment. It is within this framework of understanding that people must make decisions about the allocation of the earth's resources and the quality of life that they are willing to accept.

Environmental education, to be successful and useful for today's children, must present this more comprehensive and unified picture. Central to the implementation of this objective are new concepts and schemes for institutional cooperation and involvement in school programs. It is important, therefore, that teachers be trained in the multi-disciplinary and multi-process requisites of environmental education and that available community resources be used effectively and creatively in providing meaningful experiences for children.

The need for teacher training has become more critical in recent years as the school's role in socializing young people has expanded. The need to cope with change, to be aware of conflicting societal pressures and demands regarding the utilization of resources, and to relate to the natural and man-made environment requires that young people learn analysis and decision-making skills early in life. Childhood is a critical time in the development of citizenship responsibility, as shown by Hess and Torney (*The Development of Basic Attitudes and Values Toward Government and Citizenship During the Elementary School Year*. Chicago: The University of Chicago, 1965). The importance of these formative years places particular burden on the schools which have the formal charge of developing the intellectual faculties of children so that they may become responsible adults. In these formative years, the schools must be concerned with teaching children about a citizen's responsibility to the environment. In addition, teachers must learn to view the community as an educational laboratory for the utilization of the school's intellectual, physical, and natural resources.

The goal of the Environmental Education Training Project is to develop a teacher training model that will take an important step in meeting these objectives. The project involves the participation of 20 city teachers who have received summer workshop training in environmental education concepts and curriculum development. During the 1976-77 school year, project teachers will create mini-units in environmental education, and in addition will provide workshops and other training assistance for teachers throughout the city system.

An important feature of the training program is the organization of an ad hoc consortium, a diverse array of institutions in the St. Louis area which have resources to offer educators in environmental education. The consortium includes over 25 cultural, civic, educational, and environmental institutions and organizations. The purpose of the consortium is to develop the portion of the training model that relates to the utilization of community resources. Specifically, consortium members will assist project staff in developing a process for classroom teachers to utilize community resources in providing experiences for children which will build their understanding of the environment.

After the training model has been developed, tested, evaluated, and refined, the project staff will compile an Environmental Education Training Guide which can be used by school systems, state departments of education, and institutions of higher education throughout the country. It will offer a training program in environmental education that is multidisciplinary, multi-process, and designed to help students move toward a comprehensive understanding of the environment.

---Peggy Rustige
Calla Smorodin
September 1976

BILLINGS COOPERATIVE ENVIRONMENTAL EDUCATION PROGRAM

Ed Heiser, Environmental Education Coordinator, Billings Public Schools,
101 10th Street West, Billings, Montana 59102.

Environmental Education in Billings, Montana, in its tenth year, exists as a cooperative program, including the local school district, Eastern Montana College, and a conglomerate of federal and state agencies. The program originated in 1967 with thirty sixth graders and now includes in excess of 8,000 elementary students (K-6).

The cooperative Environmental Education program includes in-classroom, school ground, and field activities involving not only the cognitive area, but emphasizing the affective. It is the objective of the school district to produce a student who is sensitive, knowledgeable, motivated, and equipped with problem-solving skills dealing with his environment. A strong aspect of the program is the active involvement of local higher education. Eastern Montana College offers courses designed to train education majors to serve as resource persons in the local elementary schools. They assist in all areas of the school's Environmental Education program, including field studies. The involved federal and state agencies view Environmental Education as a viable management tool, ultimately producing a citizenry that is environmentally aware and cognizant of natural resources and management problems. Equipped with such knowledge, a student enters adulthood motivated to participate in the planning and decision-making processes of resource-managing agencies.

Representatives from U.S. Forest Service, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Park Service, Montana State Fish and Game, Eastern Montana College, Montana State Department of Public Instruction, and Billings Public Schools are working cooperatively in the various aspects of the local Environmental Education program. Teacher training workshops, offered for credit through Eastern Montana College, are facilitated and sponsored by this group. Workshop content parallels student curriculum, with participants actively involved in interdisciplinary, "hands-on" learning activities. A significant agency contribution has been the development of an Environmental Education Study Area on public lands near Billings by the Bureau of Land Management. This 1400-acre site is entitled "Ah-Nei", a Crow Indian word pertaining to early man's heritage in the area. The site is available year-round for utilization by the students of Billings and the surrounding area.

A continuing function of the school district is the up-dating and development of Environmental Education curriculum. College and agency representatives participate on an advisory basis. Agency Information and Education Specialists offer expertise in learning activity development.

In 1972 the Billings Environmental Education Program received national recognition. The program was selected as one of the top ten programs in the nation by the American Association of Colleges for Teacher Education. The cooperative total community effort was an important criteria for selection.

Currently, a state-wide steering committee of Environmental Educators has given birth to an organization known as the Montana Environmental Education Service Association. MEESA's objectives include cooperation between all factions interested in Environmental Education in Montana for the obvious common goal.

For further information contact: Mr. Ed Heiser, E.E. Coordinator, Billings Public Schools, 101 10th Street West, Billings, Montana 59102.

Copy of EESA Study Guide available through: Ginny Lewis, E.E. Specialist, Bureau of Land Management, District Office Box 2020, Billings, Montana 59101.

(October 1976)

SQUAM LAKE SCIENCE CENTER INC.

Robert E. Nichols, Director; Squam Lake Science Center, P.O. Box 146,
Holderness, New Hampshire 03245; (603)968-7194.

The Science Center is a non-profit educational institution, incorporated under the laws of the State of New Hampshire and founded in 1966. It is governed by a corporation of 175 members who elect the center's officers and Board of Trustees at their summer annual meeting.

Educational Goals:

1. Environmental Awareness: Through a wide variety of programs, the Center encourages visitors to use all of their five senses. Visitors thus become more aware of their environment, more sensitive to its delicate beauty, and develop a "feeling" for the processes which govern our existence on this planet.

2. Environmental Knowledge: One must not only have a "feeling" for the processes which govern our existence but also have an understanding of how the life processes operate. Thus concepts and facts are emphasized and a variety of techniques are used to reinforce these concepts.

3. Environmental Activism: The Center can only reach a finite number of students and adults in a given year, but its visitors also learn to reach out and communicate this newly discovered awareness, knowledge and enthusiasm to others.

Facilities:

The Center's 200-acre site is divided into three different educational areas:

1. Man and His Environment: Renewable and non-renewable resources are the subject of this area. An old logging road winds its way past an authentic and functioning blacksmith shop, steam-powered sawmill and an original 18th century saphouse. A new exhibit on solar energy interprets man's future needs and uses of the environment.

2. New Hampshire Animals Up Close: Sixteen indoor and outdoor exhibits emphasize the natural history of native animals. Live bear, deer and bobcat are found in natural settings.

3. Natural Ecosystems: 2.7 miles of nature trails meander past fields, meadows, ponds, numerous mountain streams and many diverse forest habitats.

Major Programs:

1. Summer Program: July 1 through Labor Day. This program reaches over 12,000 visitors annually including campers, Boy and Girl Scouts, local residents and the general public. All of the Center's trails

and exhibits are open. Lecture demonstrations are given in a barn-auditorium. Discovery presentations and other events occur along the trail system.

2. Spring and Fall School Program: April 1 through June 15, and September 20 through November 15. The Center's school program, "The Nature of Things" reaches 7,500 elementary and high school students annually, 10% of these from out of state. All of the Center's trails are open for this program along with many of the summer exhibits. The school offering includes 10 indoor lecture demonstrations and 10 outdoor discovery presentations.

3. Winter School Program: January 1 through March 31. "Winter Ecology" and "Reading the Winter Landscape on Snowshoes" are the two offerings made to schools during the winter months. The former involves an indoor demonstration at the school using live native animals, three-dimensional props and graphic artwork to convey the winter theme. The latter offering is conducted out-of-doors on snowshoes. Groups of 15 or less learn first hand about their winter environment. These two offerings annually reach 4,000 students.

Other People and Organizations Reached:

1. School teachers: In-service workshops are offered on such topics as designing nature trails, using the out-of-doors as a teaching resource, and natural history enrichment.

2. New Hampshire Fish and Game Department: The Science Center is active in the rehabilitation of injured native animals while educating the public to the value of these important creatures.

3. Universities: Intern program and research programs.

4. Campgrounds: Environmental presentations.

5. Communities: Opportunity to become part of an environmental movement through volunteer service.

6. Service Clubs: Garden, Rotary, Lions and University Clubs.

Operational Income:

Admissions--23%; Memberships--30%; Annual Giving--37%; Grants--10%; All donations are tax deductible.

Staff:

Robert E. Nichols, Director; Peter J. Hendel, Assistant Director; Earl F. Hansen, Naturalist; Thomas J. Kruzshak, Naturalist; Marjorie A. Needham, Office Manager; plus 100 volunteers.

---Robert E. Nichols
October 1976

NEW JERSEY SCHOOL OF CONSERVATION

John J. Kirk Jr., Director and Professor of Environmental Studies,
Montclair State College, Branchville, New Jersey 17826; (201)948-4646.

The New Jersey School of Conservation is operated by Montclair State College and serves as the field campus for environmental studies. It is located in the midst of 25,000 acres of State Forest and State Park and annually serves upwards of 10,000 students for resident experiences in environmental education. The students in attendance range from eight year olds (grade three) through doctoral candidates.

The philosophy of the School of Conservation is to utilize the various subjects in the curriculum, divided into four major categories - humanities, social studies, outdoor pursuits, and the natural and physical sciences - for the purpose of developing in students a realization concerning the role that natural areas play as part of a life-support system. The program emphasis is on the cultivation of attitudes and values which should enable the participant to better understand and appreciate the interrelationship and interaction of all living and non-living things. All programs at the School of Conservation are related very closely to environmental problems in the community where the students live. This enables teachers to utilize the resident experience as a catalyst for environmental projects conducted in the classroom and the community.

The School of Conservation is in its twenty-seventh year of operation as a resident environmental field center.

---John Kirk
December 1976

Extract from:
Cook College Catalog, 1976-78
Rutgers--The State University of New Jersey
New Brunswick, New Jersey 08903 USA

(Professor Baruch Boxer, Curriculum Coordinator
Department of Human Ecology and Social Sciences
Cook College
201-932-9624)

INTERNATIONAL ENVIRONMENTAL STUDIES
(PROGRAM CODE 379)

Degree: B.A. or B.S.

Objectives

This curriculum will provide an understanding of the nature and scope of international environmental issues through:

- Exploration of regional and national differences in the availability, production, and uses of natural resources;
- Study of the interdependence of nations and regions with respect to physical, biological, and social phenomena;
- Comparative analysis of cultural variations in the identification of and response to environmental stress;
- Study of alternative strategies in international environmental management;
- Consideration of the ethical and moral components of global environmental issues; and
- Study of the functions and roles of transnational corporations and national and international agencies in dealing with international environmental problems.

Options include:
- Agriculture and Food
- Earth, Oceans, and the Atmosphere
- Human Health
- International Institutions and Law
- Individual Program

The curriculum is designed to facilitate maximum flexibility in the choice of courses focused on specific problem areas, so that students will be well prepared for employment in local, state, federal, or international agencies, in private industry, as well as for graduate study in a number of the traditional disciplinary fields of study in preparation for research or teaching careers.

It should also be of interest to students in a wide variety of pre-professional or liberal arts-oriented programs of study who wish to relate their work to international environmental concerns. Completion of the *Required Courses* could serve this purpose for students in such fields as environmental science, production agriculture, humanities and communication, nutrition, natural resource management, urban studies, and earth and atmospheric science as well as for students in discipline-based programs in the natural, physical, and social sciences.

Curricular Structure	**Credits**
College Requirements	36
Required Courses	27
(6 credits may be used to satisfy college requirements.)	(−6)

11-204:125	Introduction to Population Studies (3)
11-220:320	International Trade and Finance (3) or equivalent (*Prerequisite:* 11-030:261 Introduction to Micro-Economics (3) or equivalent)
11-559:215	Introduction to International Environmental Studies (3)
11-559:301	Environment and Development (3)
11-559:312	Environmental Problems in Historical and Cross-Cultural Perspective (3)
11-559:314	Energy in World Perspective (3)
11-559:402	Senior Colloquium in International Environmental Studies (3)
11-790:221	Introduction to International Relations (3)

Note: The amount and duration of language study, if any, will be determined in consultation with the student's adviser. Two years of language study in a modern foreign language will be required of students who seek certification in Asian or Soviet and East European studies in the area programs administered by faculty committees under the jurisdiction of the International Center. Intermediate and advanced language courses can also fulfill Area E requirements.

Option Required and Elective Courses (minimum) 30

Curricular options require a minimum of 30 credit hours of basic and advanced courses to be determined by students in consultation with advisers. It is the intent of the option portion of the curriculum to make possible the development of structured, sequential, and in-depth courses of study which focus on particular subject areas in International Environmental Studies.

Agriculture and Food

Possible specializations include: production agriculture, human nutrition, agricultural economics, food distribution.

The following basic courses may be appropriate:

11-030:131 Economics of World Food Production (3)

11-120:101, 102	Biology (8)
06-160:105, 106	Introduction to Chemical Principles (8)
11-400:201	Food Science Principles (3)
11-400:415	Food in the Developing World (3)
06-520:255	Human Nutrition (3)
11-530:211	Introduction to Horticulture (3)
11-707:255	Nutrition and Health (3)
11-930:200	Introduction to Agronomy (3)
11-930:202	Soils and Man (3)

Earth, Oceans, and the Atmosphere

Possible specializations include: oceans, meteorology, soil erosion and conservation, natural hazards research.

The following basic courses may be appropriate:

11-460:204	Environmental Geology (4)
11-670:251	Elements of Oceanography (3)
11-670:301	Analysis of U.S. and World Climates (3)
11-670:302	Microclimatology (3)
11-670:305	Biometeorology (3)
11-670:306	Weather, Climate, and Environmental Design (3)
11-670:308	Weather, Climate, and Man in the Tropics (3)
11-930:202	Soils and Man (3)

Human Health

Possible specializations include: human nutrition, epidemiology, health delivery systems.

The following basic courses may be appropriate:

11-067:106	Biology of Vertebrate Animals (4)
11-120:101, 102	Biology (8)
06-120:335	Comparative Morphogenesis of Vertebrates (4)
06-160:105, 106	Introduction to Chemical Principles (8)
11-371:305	Environmental Physiology (3)
11-375:301	The Environment and Health (3)
11-375:321	Environmental Pollution in International Perspective (3)
11-532:341	Social and Ecological Aspects of Health and Disease (3)
11-375:403	Environment and Public Health: Epidemiological Aspects (3)
11-400:104	Food and Health (3)
06-520:255	Human Nutrition (3)
06-680:201	Introduction to Microorganisms (3)
06-680:203	Introduction to the Practice of Microbiology (1)
06-680:211	Microbiology and Its Application (4)
06-680:301	Principles of Microbiology (4)
11-707:255	Nutrition and Health (3)

International Institutions and Law

Possible specializations include: international pollution control, international conservation, law of the sea.

The following basic courses may be appropriate:

11-372:301	International Environmental Law (3)
11-372:325	Legal Aspects of Conservation (3)
11-375:321	Environmental Pollution in International Perspective (3)
06-790:203	Ideologies and Politics (3)
06-790:384	The United Nations System (3)
12-790:387	International Law (3)
11-790:432	Decision Making and Public Policy (3)

Individual Program

This option is available for students who wish to develop specialized programs of study in areas which necessitate combinations of courses falling outside of established disciplines or curricula.

Areas of specialization might include: environmental aspects of human settlements, environmental engineering, simulation and quantitative approaches to ecosystem modeling, and communication of environmental information.

Unspecified Electives	33
Total	**128**

INTERNATIONAL ENVIRONMENTAL STUDIES:559

11-559:215. Introduction to International Environmental Studies. (3)

Boxer.

Comparative survey of major international environmental problems; emphasis on problems of classification, regional and cultural variations in the identification of and response to environmental stress, alternative strategies in international environmental management, and the ethical and moral components of global environmental issues.

11-559:301. Environment and Development. (3)

Vayda. *Prerequisite:* Permission of instructor.

Analysis of differences among nations in development policies and the associated definitions of environmental problems in relation to socio-economic, ecological, and political variables.

11-559:312. Environmental Problems in Historical and Cross-Cultural Perspective. (3)

Boxer. *Prerequisite:* Permission of instructor.

Comparative study of the historical experience of selected Old and New World societies in evolving strategies for adjusting to environmental constraints and opportunities; historical factors bearing on current variations in perception of resource use and environmental stress; examples from China, the Mediterranean littoral, the Middle East, South and Southeast Asia, Africa, and Latin America.

11-559:314. Energy in World Perspective. (3)

McLean, Rosen. *Prerequisite:* Permission of instructor.

Basic scientific, technological, economic and political aspects of energy; their relation to supply and use of energy in an international perspective.

11-559:402. Senior Colloquium in International Environmental Studies. (3)

Required course for senior International Environmental Studies majors. Focus on a different topic each year. Taught jointly by several faculty members.

11-372:321. International Environmental Law. (3)

Goldfarb. Fall semester.

Environmental law in its international and comparative aspects. Emphasis on the nature of international law and the implications of its development for national legal systems.

PROJECT CUE: THE NATIONAL URBAN LEAGUE COMMUNITY URBAN ENVIRONMENT PROJECT

Paul Danels, Project Director; 500 E. 62nd Street, New York, New York 10021; (212)644-6500.

Overall Purpose:

To develop an informed minority perspective on environmental issues.

Specific Objectives:

To develop a training program curriculum for urban community-based minority groups leaders in environmental/ecological issues, relationships and analysis.

Target Audience:

Minority group leaders/organizers, emphasis on the inner city.

Methodologies:

The curriculum will make extensive use of audio-visual materials, including slide shows, videotapes and pamphlets. It will be culturally specific and employ the vernacular as motivational and communication tools.

Materials Produced:

The following audio-visual products are under production:

1. A slide show on how general environmental issues affect inner-city people.

2. Three individual slide-shows more intensively treating:
   a. Pollution/Toxic substances, e.g., air, water, noise, occupational safety, environmental health
   b. Solid waste
   c. Energy and its relationship to technology and employment

3. Three videotaped case studies of local programmatic actions, e.g., videotape documentary of inner-city community group on the Lower East Side (NYC) installation of solar collector on the low-income, sweat-equity cooperative.

Funding Source:

Office of Environmental Education, DHEW.

Plans for the Future:

The project's materials will be used in stimulating the participation of local minority group leaders in the local environmental decision-making processes. Both motivational and instructional, they will lay out priority urban environmental issues and provide the tools to assess options and act upon those issues in their own communities.

---Paul Danels
October 1976

BURLINGTON DAM DEBATE

Dr. Clark Markell, Director, Environmental Education Project, Minot State College, Minot, North Dakota 58701; (701)852-3100, Ext. 350.

Under the provisions of a U.S. Office of Education Environmental Education Resource Development grant, Minot State has produced a simulation game called the "Burlington Dam Debate." Simulation is an educational technique in which students are assigned "roles" in an artificial situation, and asked to do the appropriate research and critical thinking necessary to enact their role. Unlike many environmental education curriculum materials which emphasize issues in other areas of the country, this project focuses on the social, technical and environmental aspects of flooding and flood control along the Souris river system located in the Northern Great Plains.

The Simulated Situation:

The Congress of the United States is faced with proposed legislation to eliminate flooding problems along the Souris River. Large sums of money are involved and Congressmen are under pressure from several interest groups. The decision is made to set up a joint Congressional Committee to examine the various alternatives. At the first meeting of the joint committee in Washington, it becomes apparent that several members have never visited the Northern Great Plains and many know very little about local attitudes, climate or geography. For that reason the decision is made to hold a Congressional hearing at Burlington, North Dakota. The town hall is reserved and witnesses representing several points of view are called to testify.

The Materials:

Each set is packaged in a 10x12 inch firm box and contains the following published materials:

A. Seven Profile Cards: Seven four-page folders containing text, pictures and cartoons are used to summarize the views of each "witness." Witnesses include:

    1. A Local Mayor
    2. President of the "Friends of the Valley Association"
    3. Regional Director of the Army Corps of Engineers
    4. A professor of ecology
    5. Canadian citizens from Saskatchewan and Manitoba
    6. Flood plain residents
    7. A farmer living upstream from the proposed dam site

B. One Resource Book: A 20-page newspaper has been "published" for use as a resource by any students wishing to augment testimony or to prepare testimony for new witnesses.

C. Name Tags: These are suitable for propping up in front of a panelist sitting at a table.

D. Teachers Guide: This contains suggested rules and procedures to follow. Considerable space is devoted to a discussion of how teachers and students can design a new simulation about other important local issues.

E. Audience Profiles: Roles have been developed for audience people in the simulated hearing. Characters range from local youth and elderly farmers to news media representatives.

---Clark Markell
October 1976

HILLSIDE PROGRAM AND REPORTS

The Cincinnati Institute, 2090 Carew Tower, Cincinnati, Ohio 45202.

This program was initiated in 1972 and was made possible by a grant from the Architecture and Environmental Arts Program of the National Endowment for the Arts under its City Edges program, by contributions and grants from concerned Cincinnati citizens, businesses and foundations, and by contracts with the City Planning Commission and Department of Urban Development of the City of Cincinnati.

A special newspaper supplement (#9 below) was further funded by a grant under the Environmental Education Act from the Office of Education, Department of Health, Education and Welfare, a grant from Scripps-Howard Newspapers, and donated services from the University of Cincinnati and The Cincinnati Post.

Reports available are:

1. The Effect of Aesthetic Considerations on the Validity of Zoning Ordinances; The Status of Aesthetic Land Use Controls in Ohio by Robert E. Manley and Timothy A. Fischer; $3.50.
2. Environmental Quality Protection Regulations for the City of Cincinnati: A Preliminary Strategy Report by Robert E. Manley; $3.50.
3. Hillside Studies and Legislation Across the United States by J. A. Chewning; $5.00.
4. The Visual Importance of Cincinnati's Hillsides by Hayden B. May and Samuel V. Noe, Jr; $3.50.
5. Outline of a System of Environmental Protection Zoning Ordinances for the City of Cincinnati; $3.50.
6. Landslide-Prone Bedrock Hillsides Within the City of Cincinnati, a map (48" x 74") prepared by James E. Hough and Associates and Robert W. Fleming; $50.00.
7. Summaries - Hillsides Reports 1-6; $3.50.
8. Cincinnati Hillsides Development Guidelines, containing the principles and guidelines for development within Hillside Environmental Quality Zoning Districts; $3.50.
9. A Topography of the Mind: The Meaning of Cincinnati Hillsides, a special newspaper supplement documenting the perceptions and values of the citizens; $1.00.

In the Spring of 1977, it is expected that a research report will be available describing the results of this publication upon public awareness and action.

As of October 1976, the City Planning Commission is preparing an explanatory report on Environmental Quality Zoning. It is expected that this report will be available from that office by early 1977.

None of these reports necessarily reflects the position or policy of any Federal agency and no U.S. Government endorsement should be inferred.

(October 1976)

INFORMATION REFERENCE CENTER FOR SCIENCE, MATHEMATICS, AND ENVIRONMENTAL EDUCATION. The Ohio State University, 1200 Chambers Road, Room 310, Columbus, Ohio 43212; (614)422-6717.

Collection, processing, and dissemination of information related to environmental education is a primary objective of this clearinghouse, one of 16 Educational Resources Information Center (ERIC) installations funded by National Institute of Education, DHEW, across the United States. Each of the 16 has responsibility for such activities in specific areas of educational concern; collectively, they deal in all areas.

This Ohio State center secures information---research, curriculum materials, and the like---related to science, mathematics, and environmental education. Other ERIC clearinghouses also process some documents of interest to environmental educators, as they may relate to their areas of responsibility. For examples, the Social Science clearinghouse at Boulder, CO, is concerned with the broad areas of the social studies, while the Rural and Small Schools clearinghouse at Las Cruces, NM, frequently reports materials related to outdoor education.

All ERIC centers prepare document abstracts, which are printed monthly in Resources in Education, the system's primary announcement vehicle. A sophisticated system of descriptors and identifiers aids in retrievability of docments of particular interest. Documents themselves are made available to interested parties in hard (photo) copy and/or microfiche from Educational Document Reproduction Service, P. O. Box 190, Arlington, VA 22210, or from original publishers. Complete ERIC microfiche collections are located at more than 600 sites around the world, mostly in the United States.

The Ohio State center has published a number of documents in environmental education, often drawing on materials in the ERIC data base---collections of teaching activities, directories, research reviews, summaries, and the like. In addition, cooperative arrangements with such organizations as Alliance for Environmental Education, National Association for Environmental Education, and Western Regional Environmental Education Council have resulted in publications of Current Issues volumes, conference reports, etc.

SCHOOL OF NATURAL RESOURCES, THE OHIO STATE UNIVERSITY. 2120 Fyffe
Road, Columbus, Ohio 43210; (614)422-2265.

Management of natural resources is the primary focus of The Ohio State University's School of Natural Resources, a unit of the university's College of Agriculture, Home Economics, and Natural Resources. The School is organized in the pattern typical of land grant institutions in the United States, having responsibilities in the areas of resident instruction, extension, and research.

Functionally, SNR operates through five divisions---Environmental Education, Fisheries and Wildlife Management, Forestry, Parks and Recreation Administration, and Resource Development. The divisions offer resident instruction programs affording undergraduate degrees in a variety of natural resources management-related areas, such as interpretation, fisheries management, forest industries, park management, land use planning, and others. A number of M. S. programs also are available.

Research is conducted in several areas, primarily in forestry through the Ohio Agricultural Research and Development Center at Wooster, Ohio. State-level specialists of the Cooperative Extension Service in forestry, wildlife management, and outdoor recreation also operate through SNR.

In addition to the Wooster research center, other off-campus facilities include the Barnebey Center for Environmental Studies, a 1300-acre site utilized primarily for field instruction and resident outdoor education, located 45 miles southeast of the main campus.

Still less than ten years old, the School of Natural Resources has continually found itself dealing with increasing student enrollments, to the extent that the areas of extension and research have not been developed as rapidly or completely as desired. However, SNR has been able to work cooperatively with other units on campus, private industries, and with governmental agencies such as the State of Ohio's Department of Natural Resources, and others, in all three target areas.

ENVIRONMENTAL ECONOMIC LITERACY AND MATERIALS DEVELOPMENT INSTITUTE

Dr. Frank S. Wert, Assistant Professor of Economics, Central State University, 100 N. University Drive, Edmond, Oklahoma 73034.

The theme of the project, funded under P.L. 93-278, is the interrelations of man, ecology, and technology. The purpose of the project is to upgrade the quality of environmental instruction at the level of grades 7-12. The project will enhance students' and teachers' understanding of the impact of scientific and technological progress on their work and personal lives, thereby fostering insights into public issues which involve the interface of the environment, science, and technology.

The process of developing new curriculum materials by infusing economic and science concepts which are implemented in the classrooms will enable the teachers to apply more effectively economic tools of analysis to environmental issues.

Over a two-year period, Central State University in Edmond, Oklahoma will conduct two 2-week Summer Institutes for 24 secondary science and social studies teachers. In the first 2-week Institute, participants will develop tentative environmental education curriculum materials to be implemented in their respective schools during the 1976-77 school year.

In the second 2-week Institute, participants will revise and upgrade the previously developed materials that have been utilized and tested in the classrooms. The finalized materials will be disseminated and implemented throughout Oklahoma school systems by the Oklahoma Council on Economic Education and the Joint Council on Economic Education.

The Institutes will be staffed by economics, natural resources, and curriculum development personnel at Central State University.

---Frank S. Wert
October 1976

Western Regional Environmental Education Council

The Western Regional Environmental Education Council was founded in 1970 to bring together state education and resource management agency personnel with responsibilities in the field of environmental education for the purpose of encouraging the development of good programs at all levels, and coordinating activities on a regional basis. A four-year grant was obtained from USOE (ESEA Title V, Section 505) to facilitate the work of the Council. In 1973 a grant was obtained from the American Forest Institute through which the Council is developing a K-12 curriculum package on forest conservation.

States participating are: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

The Council has incorporated as a nonprofit corporation, and intends to continue its work in the years ahead.

The Council meets twice a year in one of the member states, usually for five working days. Committee meetings are held as needed. Specific activities in which the Council participates include:

State Programs: Developing roles and responsibilities for state resource management and education agency personnel, cooperative relationship, state planning.

In-service Training: Each meeting includes at least one day devoted to activities to extend and upgrade the skills of all participating members. Materials and plans for local workshops are also provided.

Informational Exchange: Delegates report on the activities of their agency at each Council session and new materials are distributed and discussed. In addition, the project director serves as a means of two-way communication between the Council, other ESEA V projects, and appropriate governmental and private agencies.

Regional Program Coordination: Several programs have been conducted which involve the participation of all 13 member states on a cooperative basis. A number of activities involving two or three neighboring states have also been conducted.

WREEC members discuss current issues in the environmental educational field and frequently pass resolutions which are forwarded to various agencies and/or officials for their information and guidance.

WREEC has conducted a number of activities resulting in the development of materials for use in all participating states. These products include guides for the development and use of environmental education materials, a regional environmental education state program status report, and a mini-grant program to encourage the development of worthwhile local projects. A newsletter is produced twice a year and distributed nationwide, and work is being completed on a K-12 forest conservation instructional package.

WREEC Council members have developed a number of recommendations for programs and activities which they would be willing to participate in or conduct in cooperation with appropriate agencies.

The WREEC project has helped develop a strong cooperative working relationship between state education and resource management agencies. A similar relationship involving federal agencies operating within the 13 state area is one of our high priority objectives.

A cooperative national organization through which materials and ideas could be exchanged and some national planning and coordination accomplished is seen as another important need in the field.

Public support for environmental education programs at all levels is essential. A program to identify possible areas of support and to develop a strong public image for this study area is needed.

Workshops for teachers, school administrators, community leaders, resource agency personnel and covering a number of specific skills are needed. Subjects might include: How resource agencies and other organizations can prepare effective materials for school use, conducting teacher workshops, how to prepare and evaluate media presentations, and organizing and utilizing community support for environmental education programs.

An informed but impartial national group to review and advise commercial publishers and others who produce environmental education materials would be valuable. In this way time and money wasted on overlaps, duplications, and materials which just are wide of the mark might be eliminated.

A consultant service and accreditation procedure for state plans would be valuable and could save each state a great deal of unnecessary work.

WREEC possesses two valuable assets which could form an important part of any of the above projects or activities. These are (1) 26 members with a variety of skills and knowledge in the environmental education field and (2) a means of contacting and working with schools and state resource management personnel in 13 western states.

Current president of WREEC is Cliff Hamilton, Oregon Game Commission, P. O. Box 3503, Portland, Oregon 97208.

ENERGY AND MAN'S ENVIRONMENT, INC.

Dr. John C. Jones, President; 0224 Southwest Hamilton, Suite 301,
Portland, Oregon 97201; (503)226-7131.

Energy and Man's Environment (EME) is a nonprofit corporation serving educators in the western United States. EME initiates and supports balanced and objective curriculum development and teacher training programs designed to achieve energy and environmental literacy.

EME was initiated in 1972 by the Public Power Council of the Northwest Public Power Association in cooperation with principal state educational agencies in Washington, Oregon and Idaho. In 1973, Northwest Electric Light and Power Association, representing all regional investor-owned utilities, joined the consortium, thus doubling the financial base and strengthening regional program potential. EME is endorsed and supported by the State Departments of Education in eight western states--Washington, Oregon, Montana, Wyoming, Utah, Idaho, Colorado and Nevada. In each state, EME provides a wide spectrum of educational services.

Headquarters for EME is in Portland, Oregon. Support for field operations is provided by the Director of Regional Operations centered in Salt Lake City, Utah. Individual state programs are administered by highly qualified State Coordinators. Each is an acknowledged educational leader with special skills in classroom instruction, program development and implementation. Each coordinator develops and manages energy education programs within his/her state with the assistance of a carefully selected Energy Education Advisory Committee. State committees include broad representation from industry, education, government and the private sector to insure programming strength and objectivity.

Energy and Man's Environment offers educators a wide range of unique energy and energy-related environmental education programs. Each in-service or curriculum development activity is "custom tailored" to meet the specific needs and interests of the participants. EME focus is multidisciplinary and K-12. Programs include:

1. Conferences: provide in-depth analysis of major global, national and regional energy issues. Each conference provides insight into current and projected energy systems and their impacts; inspects herent social, political, economic and philosophic issues; initiates dialogue with experts and resource persons; and develops insight into the educational implications of the energy dilemma.

2. Workshops: prepare teachers of all disciplines and grade levels to introduce energy concepts into their existing instructional programs. EME workshops focus on both content and process aspects of energy education. With the cooperation of school district administrators and teachers, each workshop is "custom tailored" to meet the special needs and interests of the participants and their students.

3. Seminars: focus on examination of selected energy topics with content specialists. Each seminar is prepared to meet special participant information needs.

4. Speakers: from all disciplines are available to educators throughout the EME region. Requests are initiated through the respective State Coordinators or the EME Portland office.

5. Special Programs: meet unusual energy-related educational needs. Special programs have been designed for school administrators, school plant and facilities managers, transportation supervisors, debate teachers and school counselors. Local utilities, universities, research agencies and other energy management groups are available to provide specific resources, materials, and speakers to those educators with special needs.

Energy and Man's Environment conducts an ambitious reference and instructional materials development effort. Currently available resources include a seven-part Energy Activity Guide, Energy/Environmental Glossary, Energy Films Index, Learning Activity Packages, Energy Calendar for classroom use, Annotated Bibliography of Key Energy/Conservation Education Resources and professional papers. These materials are available without cost to educators participating in EME developmental programs within the service region, and at cost to other educators.

---John C. Jones
December 1976

RECYCLING INFORMATION OFFICE

Loren Kramer, Director; Jane Crease, Public Information Representative; Department of Environmental Quality, Recycling Information Office, 1234 S.W. Morrison Street, Portland, Oregon 97205; (503)229-5119.

The Recycling Information Office of the Oregon Department of Environmental Quality works daily to inform the public why, how, what and where to recycle. Part of that process includes work with schools and educators. The office has materials available which Oregon schools use.

The 1975 Legislature established by resolution state policy that Oregon public educational institutions should act to make resource conservation an integral part of their physical operations and curriculum by teaching about recycling, by reducing school waste, by recovering marketable school wastes, and by purchasing recycled products.

To implement that policy the DEQ Recycling Information Office began to work cooperatively with the Oregon Department of Education and Oregon Recyclers.

In January 1976 a workshop was held to discuss the Legislative resolution and to determine how best to implement it. A letter went to all state schools from the Department of Education informing them of the resolution and asking for participation. Shortly thereafter the Environmental Education Association of Oregon, a private organization, decided to fund a curriculum development project. The project was cosponsored by the DEQ and the Department of Education. (EEAO Contact: President Mike Vaughn. EEAO, P.O. Box 5484, Eugene, OR 97405; DEQ Recycling Office Contact: Jane Cease, 1234 S.W. Morrison, Portland, OR 97205; Department of Education Contact: Claudia McDuffie, Environmental Education, Department of Education, 942 Lancaster Drive N.E., Salem, OR 97310.)

At a May 1976 workshop educators and recyclers reviewed the first draft of "Reduction, Re-Use and Recycling: The Three Rs to the Best Use of Earth's Finite Resources," a curriculum guide to facilitate infusion of the three concepts into school curriculum, grades K-12.

EEAO members and Recycling Information Office staff edited the curriculum packet and produced a working draft. This is being reviewed and tested in Oregon classrooms during the 1976-77 school year. After that time the EEAO will determine format for a salable curriculum guide.

---Jane Cease
October 1976

ENERGY: A TECHNOLOGICAL, ECONOMIC, OR MORAL CRISIS

John H. Anderson, Professor of Physics, University of Pittsburgh,
Faculty of Arts and Sciences, Department of Physics and Astronomy,
Pittsburgh, Pennsylvania 15260.

Since January of 1974 we have offered a course entitled Energy: A Technological, Economic or Moral Crisis. The course has been a part of the University External Studies Program of the University of Pittsburgh. Like other courses in the program, it is designed for home study. The class meets three times during a term, mostly for viewing films and class activities such as simulations and debates.

The course is intended to give those enrolled in it a basic understanding of energy, its importance in man's activities, and of the economic, social, and environmental problems generated by the increasing rate of utilization of energy. A further goal is to serve as an example to teachers of how to build a course which will blend traditional science with considerations of man's needs. Lay persons should become acquainted with resources in the field of energy, economics, and the environment.

The course is aimed at secondary school teachers, lay persons interested in problems of energy and the environment, and persons who enroll in the University's Energy Resources Program.

Because of the widely varying backgrounds of those who enter the course, we have provided a number of options permitting the student to tailor the course, to some extent, to her/his interests. Specific objectives of the course are, therefore, difficult to state, varying as they do from one student to another. For a given student the objectives are consistent with some subset of the following broadly stated goals:

1. To describe the role that energy plays in individual lives and civilization.

2. To learn factual data on energy supply and demand in the U.S. and the world.

3. To be able to list and discuss environmental side effects of energy production and use.

4. To learn and evaluate strategies for coping with environmental effects of energy production and use.

5. To become acquainted with the action of public and governmental institutions which regulate and set energy and environmental policies.

6. To examine criteria and methods for decision making in energy and environmental matters, recognizing the complexity of the problem and the possible need for developing new ethical insights.

7. To participate in problem-solving activities in energy and environmental areas.

8. To learn (or review) the concepts of work, energy and power.

9. To learn, understand in examples and apply the laws of thermodynamics, the idea of the degradation of energy and the concept of entropy.

10. To understand, be able to explain and apply knowledge of the details of operation of conventional engines and such less conventional devices as nuclear reactors, fuel cells, MHD generators, solar cells, etc.

11. To evaluate various schemes for the use of energy from the point of view of efficiency and environmental side effects.

We have produced a study guide which is really a textbook complete with objectives, study aids, and sample tests and a book of answers to all questions. Some supplemental readings are included in the course.

The original development of this course was funded by the Office of Environmental Education of the Department of Health, Education and Welfare.

We are currently revising the course structure as well as the textbook. Because the book is in midstream, we have no materials for distribution at the moment, the supply of the original version having been exhausted.

---John H. Anderson
October 1976

ENVIRONMENTAL MANAGEMENT PROGRAM

Joseph Breth, Program Coordinator; North Central Pennsylvania Regional Planning and Development Commission, 218 Main Street, Ridgway, Pennsylvania 15853; (814)773-3162.

The North Central Pennsylvania Regional Planning and Development Commission was awarded a grant on July 1, 1975 from the U.S. Department of Education for a one-year program on Environmental Education. The award was for $10,000 to be used to provide an Environmental Management Training and Educational Program for local personnel.

The program was designed to acquaint local officials and interested citizens with environmental issues affecting the North Central Pennsylvania region, as well as provide some basic environmental education for the local area.

The topics were established as follows: Local Water; Water Pollution; Industrial, Commercial, and Agricultural Pollution; Solid Waste Management; Land Use, Soil, Water and Development; and Community and Environmental Control.

Each seminar consisted of two and one-half hours of class with a cross-section of speakers from each side of the issue. Each seminar was then followed in two weeks by a workshop which dealt with specific areas of concern of the participants.

At the completion of the six-topic program, the Agency provided certificates of completion to people who attended three or more of the topics. Sixty-three certificates were awarded.

The Agency also compiled a survey form and submitted it to all the parties attending the program. About an 80% return of the questionnaires provided us with insight as to topic areas that were considered good and new topics for additional classes. The questionnaire results showed that all the topics were well-received and the speakers ranged from excellent to very good.

This program was concluded in May 1976. At present, the Commission is not directly involved with this type of educational project. However, recognizing the constant demands for courses and training, it is ready to assist in implementing such projects when the opportunities arise.

---Joseph Breth
October 1976

OCEANOGRAPHIC SCIENCES CONCEPTUAL SCHEMES PROJECT, ESEA TITLE III

Paul F. Teller, Director; Charleston County Public Schools, 3 Chisolm Street, Charleston, South Carolina 29401; (803)722-8461.

The overall purpose of the Oceanographic Sciences Conceptual Schemes Project (OSCSP) was to devise a means of introducing marine science studies into our highly-structured, largely land-based science programs. The program had to be low in cost, flexible, and could not involve intensive field studies. The target population included all science teachers and students of grades 9-12 in the Charleston County Public Schools.

After two years of working directly with teacher workshops, class field trips, and normal science classes in diverse schools, it was determined that the most useful permanent product of OSCSP would be a set of guides to the marine environment, including exercises, which would enable teachers to devise a marine science course tailored to the constraints and other features of their own situations. The major topics of the books were based on a national survey of priorities in ocean science topics by the OSCSP staff which appeared in *Science Education* as "Priorities in Ocean Science Study" (*Science Education* 58(4): 449-456 (1974)).

Eventual OSCSP products included ten books, listed below, on marine and related sciences and a paper describing the results of the priority survey.

Animals of the Sea: Coelenterates	ED 086552
Animals of the Sea: Protozoa	ED 086552
Animals of the Sea: Sponges	ED 086552
Aspects of Marine Ecology	ED 086553
Estuaries	ED 086554
Marine Biological Field Techniques	ED 086555
Sea Changes: Topics in Marine Earth Science	ED 086556
Zones of Life in the Sea	ED 086557
Animals of the Sea: Ctenophores	
Field Guides: Natural History in the Classroom	

There are no plans for the future, other than possibl getting money for revision and reprinting of the books.

---Paul F. Teller
October 1976

ENVIRONMENTAL EDUCATION WORKSHOPS

Lowell D. Richards, District Director, First Planning and Development
District, Model Rural Development Program, 401 First Avenue, N.E.,
Watertown, South Dakota 57201; (605)886-7224.

The overall purpose of our workshops is to expose local officials and the general public to recent developments in environmental legislation especially as it pertains to local policies and practices. Workshop activities will be designed to assist local officials and citizens in making decisions, individually and collectively, that will enhance the quality of their environment.

Specific objectives: (a) Inform local elected and appointed officials of recent state and federal air quality, water quality and solid waste regulations, and lakes preservation; (b) Examine the relationship among local, state and federal environmental programs; (c) Analyze the alternatives open to local governments to comply with environmental regulations and the cost/benefit of each alternative.

Each workshop (six in all) will involve various topical areas that concern citizens in eastern South Dakota. Speakers for each topic will be used to provide information through a general presentation and then a discussion session with the audience. These speakers will be persons lending scientific and planning expertise to current environmental questions.

All locally elected officials will be contacted and newspaper announcements will be used to publicize the workshops. Each workshop will be held in the evening at the southern end of the planning district and on the following evening at the northern end of the district.

The total project is being funded by a grant from the Environmental Protection Agency. This is the first time such Environmental Education Workshops have been sponsored by our office. I feel it would be very worthwhile to have a yearly series of workshops to deal with new environmental legislation if funding and staff time would permit.

---Lowell D. Richards
October 1976

ENVIRONMENTAL EDUCATION PROJECTS AND ACTIVITIES
TENNESSEE VALLEY AUTHORITY

The Environmental Education program of TVA seeks to share the expertise of staff in the development and implementation of local, state, and regional Environmental Education programs within the Tennessee Valley Region composed of all or a part of the states of Tennessee, Kentucky, Mississippi, Alabama, Georgia, North Carolina, and Virginia. In an effort to provide supportive services, TVA has closely aligned its efforts with the state departments having responsibility for the development of Environmental Education. As a Federal Agency, TVA receives Congressionally-appropriated funds with primary targets for the program to be Valley residents. Three major program components are being implemented to meet the educational needs.

These programs are as follows:

1. Regional Environmental Education Development (REED) project:

   Reed is designed to develop a network of 12 to 15 cooperatives that will collectively span the Valley. The cooperatives, composed of school systems, represent the major effort in formal Environmental Education. Upon receiving a proposal from a cooperative descriptive of program activities and plan of implementation TVA and the cooperative enter into a letter of agreement. The agreement may include TVA funding for a full-time Environmental Education Coordinator and development of facilities and land. Common program thrusts include teacher-training programs, material and resource identification and collection and site specific curriculum development, with TVA staff as resources. While programatic imput is continuous, financial imput is on a sharing basis with TVA's share decreasing and the cooperative share increasing until self-sustaining status is reached within an established period.

2. Regional Environmental Interpretive Development (REID) project:

   REID is designed as the Non-Formal Education component. REID sites are chosen with respect to their unusual scenic phenomena, cultural significance, availability to general public and proximity to or on TVA lands or facilities with programatic priorities dependent upon specific sites. Facility and/or program development will vary with sites.

3. University Cooperative (UC) project:

   Each (UC) is designed to develop the Environmental Education program efforts of a university or group of universities and TVA. The (UC) effort includes the design and development of pre-service training programs, new components for Environmental Education programming, and to serve as a research and resource base in their geographical area. Projected activities includes internships, staff sharing and co-sponsorship of symposia and workshops. TVA will provide funding for a staff position to coordinate Environmental Education efforts.

CITYSCAPE: A CITY AND ITS RIVER

Sherry Kafka Wagner, Director, Project CITYSCAPE, Southwest Educational Development Laboratory, 211 East 7th Street, Austin, Texas 78701; (512)476-6861 Ext. 260.

The Southwest Educational Development Laboratory, an Austin-based non-profit corporation, has received a grant from the U.S. Office of Environmental Education to produce a one-hour television show entitled CITYSCAPE: A CITY AND ITS RIVER. This production will deal with the development of the San Antonio River and the process by which that river was transformed from a liability to an asset.

Purpose of the television production is twofold: (a) To introduce a wide viewing audience to the issues of urban design and to develop consciousness about the built environment as well as the natural environment; (b) To use this production as a pilot production in an attempt to seek funding for a television series entitled CITYSCAPE which would study a number of success stories from communities throughout the nation, both large and small.

Project products will include a 52-minute 16 mm. color film, videotape and videocassette copies of the film, printed guides to accompany the presentation, and a final report including a Project Evaluation. Project activities began on August 15, 1976 and will be completed by April 15, 1977. Location shooting on the San Antonio River will occur this fall.

A seven-person national Advisory Board, composed of architects, planners, and citizens concerned with environmental issues, has been formed to aid in the development of the project. Serving on the board are: John L. Kriken, San Francisco; Weiming Lu, Dallas; Nancy Brown Negley, San Antonio; Andrew Euston, Washington, D.C.; Peter Chermayeff, Boston: Patsy Swank, Dallas; and Vicki Beal, San Antonio.

Sherry Kafka Wagner, Project Director, will supervise all facets of the project, including serving as producer of the film. The film will be directed by Warren Skaaren, President of the Skaaren Corporation, a media consulting firm in Austin.

---Sherry Kafka Wagner
October 1976

SEMINAR ON WATER QUALITY

Lewis H. Boyle, Project Coordinator, Environmental Education and Training Program, Texas Water Quality Board, P.O. Box 13246, Capitol Station, Austin, Texas 78711; (512)475-6060.

The Texas Water Quality Board's Environmental Education and Training staff is continuing to offer its Teacher Seminar Program on Water Quality Management during the 1976-1977 school year. Since the seminar's beginning in September, 1972, eighty-one programs have been conducted with more than 2,300 teachers from all areas of the state participating in this training function. As in the past, the seminars are provided at no charge to the participating schools.

The seminar is a six-hour program designed for secondary science and social studies teachers who are interested in incorporating realistic water quality concepts into their classrooms. The program provides participants with accurate up-to-date basic information on water quality management. From this base, teachers will be able to develop learning experiences in environmental water quality for their students.

The seminar focuses on five major topics: 1) Role of Federal, State, and Local Governments in Water Pollution Control; 2) Water Quality Parameters; 3) Wastewater Treatment Methods; 4) Biological Responses to Water Pollution; and 5) Social and Economical Factors Affecting Water Pollution Control. Members of the training staff utilize 35mm slide presentations, 16mm films, thought-provoking tests, demonstrations, and group discussions to accomplish seminar objectives. Each participant in the seminar receives a teaching packet of supplemental resource materials which is related to the seminar topics, and may be easily incorporated into the teaching curriculum. All equipment used in the program is provided by the TWQB, and each seminar is conducted on the campus of the participating school.

---Lewis Boyle
October 1976

DEPARTMENT OF CONSERVATION AND CULTURAL AFFAIRS, ENVIRONMENTAL STUDIES PROGRAM 1976-77

Mrs. Doris Jadan, Environmental Education Specialist, P.O. Box 64,
Cruz Bay, Virgin Islands 00830.

A Legislative grant of $23,000 for Fiscal '77 to the Department of Conservation and Cultural Affairs has been approved by the Governor to insure continuation of the Environmental Studies Program (E.S.P.) for forty elementary classes in the St. John-St. Thomas School District.

The Environmental Studies Program for Virgin Islands elementary pupils is the first and only continuing program of environmental education anywhere in the Caribbean. Some 8,500 pupils have participated in the E.S.P. over the past six years.

Interested teachers from grades 1-6 and special education classes will be approved by principals and the Environmental Education Specialist directing the program for the Department of Conservation and Cultural Affairs, Mrs. Doris Jadan. Mrs. Jadan has taught in the Virgin Islands since 1955 and initiated the Environmental Studies Program in 1970.

Each teacher in the E.S.P. for 1976-77 is expected to set up an environmental study area on school grounds or within walking distance of school, using techniques developed in the National Environmental Study Areas (NESA's) in the V.I. National Park, at Reef Bay, Annaberg, and Salt Pond-Drunk Bay. In this way, all students in each school will benefit from the program and be able to develop projects of their own as a spinoff from the E.S.P.

Teachers selected for the E.S.P. are required to attend one of four scheduled two-day workshops conducted by the E.S.P. in cooperation with the V.I. National Park.

Over the past six years, E.S.P. lesson plans and activities have been developed as an integral part of the total elementary curriculum. Materials used are local and relevant to pupil needs and interests.

The basic E.S.P. text is A Guide to the Natural History of St. John. This text provides pupils and teachers detailed cultural/natural history information on the three NESA's used as classrooms-without-walls, including illustrated plant and bird checklists.

Two readers for 8-12 year olds, The Adventures of Ivan Environman and The Holiday Adventures of Ivan Environman, have been published for pupil use by E.S.P., Inc., a local, tax-exempt educational organization. The Ivan books include stories pupils helped select. Over 260 Ivan stories have appeared weekly in The Daily News of the Virgin Islands since 1972 as part of a continuing effort to provide West Indian-oriented reading material for the language arts and social studies curriculum.

New lesson plans have been prepared for teachers in the 1976-77 E.S.P. emphasizing critical local options available to the child at home and school as a young consumer. These lessons investigate specifics of solar, wind, and brick oven baking as alternatives to fossil fuels. Hydroponic farming to produce vegetables with one tenth the water used for conventional cultivation will be studied, and small school hydroponic gardens can be built. Working with the Department of Commerce, E.S.P. had developed plans for pupils to demonstrate the ecologic/economic advantage of coping with hard times developed during the years preceding tourism. The interaction of pupils, tourists, and older Virgin Islanders at the Annaberg Living History Program has proved the rewards of this local interaction with tourists.

Five basic concepts, or STRANDS, are used in the Environmental Studies Program to help pupils tie together their observations and discoveries in the program. These STRANDS are: Similarities and Varieties; Patterns; Interactions and Interdependencies; Continuity and Change; and Evolution Through Adaptation. Adventures in Environment books developed by the National Park Foundation have been purchased by the Department of Education to assist teachers in using the STRANDS concepts to integrate their own environmental education projects effectively into daily lesson plans.

Evaluation of the Environmental Studies Program as part of the E.S.P. teacher's daily lesson plans and setting up study areas at or near school will be a continuing process throughout the school year involving principals, Department of Conservation and Cultural Affairs staff, and the V.I. National Park, along with parents and pupils themselves.

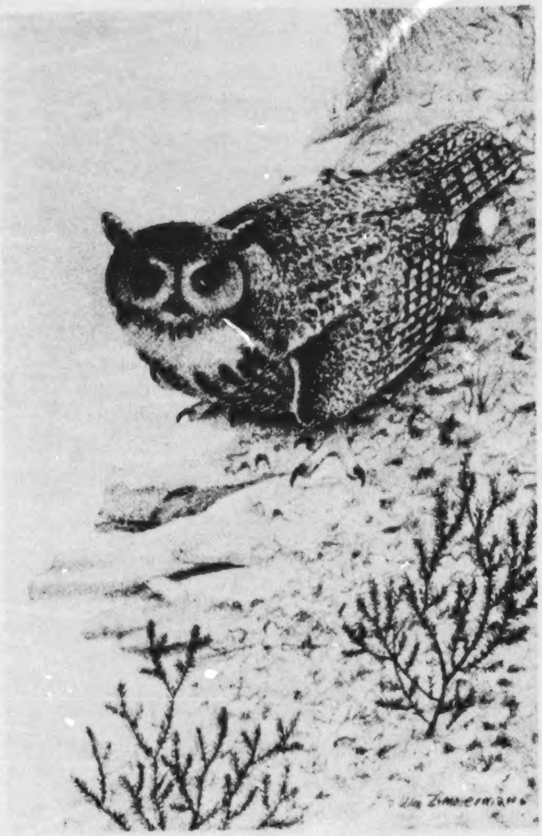
For children in the E.S.P., environment means everything surrounding them, plus everything they surround with understanding. E.S.P. classroom and field activities are designed to offer Virgin Islands children the direct sensory experiences and research data necessary for them to make personal, informed choices about the best ways to protect and develop V.I. Human and Natural Resources.

The development of a viable Virgin Islands environmental ethic depends on the educated decisions Virgin Island children make here and now, at home and at school.

The overall goal of the E.S.P. is increased awareness, appreciation and concern by Virgin Islands children for unique but limited resources on which the quality of their lives depends now and fifty years from now.

The E.S.P. Office is located in the Cruz Bay Public Library. Tel: 776-6359.

(October 1976)



Great Horned Owl, sketched by noted wildlife artist, William Zimmerman. Prints of this painting will be sold to raise $25,000 needed to match AMAX Foundation's $75,000 grant in effort to save Big Walnut Valley, Indiana

THE AMERICAN LAND TRUST PROGRAM

THE COAL COMPANY AND THE GREAT HORNED OWL

Lynn Mohn
Communications Coordinator
American Land Trust

ITS TALONS curled over the edge of the rocky bluff, a great horned owl ruffles its feathers and looks down into the valley. Little does it know that Big Walnut Valley, its home since birth and home for untold generations of its kind before, was dramatically rescued from the chain saw only a few short months ago.

Thirty miles west of Indianapolis, Indiana's Big Walnut Valley had been recognized by many, including the American Land Trust, as the most critical unprotected natural area in the state. In the valley's cool Canadian north woods environment grow what is thought to be the world's largest living sugar maple, as well as the two largest sassafras trees and the second biggest hemlock in Indiana. Twenty-four species of warblers, a rare spider species, and a great blue heron rookery are also found there. Understandably, conservationists had been keeping a nervous eye on Big Walnut for more than 10 years.

Suddenly, in mid-1976, the owner of a key 127 acres announced plans to sell the timber on [illegible] property. Acting quickly on behalf of the American Land Trust, The Nature Conservancy negotiated an option and concluded purchase arrangements on New Year's Eve. The purchase cost of $100,000 had to be raised from the public.

In Indianapolis, AMAX Coal Company, the nation's third largest coal producer, got wind of the Big Walnut rescue. At the request of AMAX Coal, the AMAX Foundation offered a challenge grant of $75,000 toward the purchase *if* the public would give the remaining $25,000. To help spur the campaign, AMAX commissioned William Zimmerman, noted wildlife artist, to paint the great horned owl. Five hundred prints of the painting, signed and numbered, went on sale for $50 apiece, each sale to be matched by $150 from the AMAX Foundation. The Conservancy's Indiana Chapter is coordinating the Big Walnut drive, with the assistance of the Garden Club of Indiana and the Indianapolis Garden Club.

Like AMAX Coal Company, corporations everywhere have responded to the trumpet call of the American Land Trust, along with thousands of private citizens. Recent additions to the list of corporate land donors and supporters are impressive. Let's look:

- Seaboard Coast Line Railroad gave a 176-acre addition to the existing Honorable Theodore Roosevelt preserve near Jacksonville, Florida, a gift of hermit Willie Browne to The Nature Conservancy in 1969 just before he died.
- The Continental Group, biggest packaging firm in the world, donated 138-acre Stevens Creek, South Carolina, home to an endangered salamander, a rare shrub, and unusual trees.
- Metromedia, the radio and TV show production and broadcasting firm and sponsors of Ice Capades, contributed 715 acres atop Mt. Wilson, the tallest peak overlooking Los Angeles, California, worth $1.3 million.
- In its third gift through the Trust, Union Camp Corporation, the forest products company, gave Crescent Lake, Florida—2,850 acres worth nearly $1 million. Union Camp also recently announced that it will match every $5 donation its employees make to the American Land Trust.
- Citibank in New York City loaned The Nature Conservancy $8.5 million to save the last undisturbed wetland on Long Island, New York, at Napeague Bay—1,364 acres—for the ALT program.

Other corporate land gifts have included the following:

LAND AREA	DONOR	VALUE	ACREAGE	DESCRIPTION
Great Dismal Swamp, N.C.	Weyerhaeuser Co.	$6 million	11,000 acres	Diverse swamp habitat
Crystal Bog, Maine	J. M. Huber Corp.	$500,000	3,793 acres	Unspoiled sphagnum-heath bog
Seboeis River, Maine	J. M. Huber Corp.		714 acres	8½ miles along whitewater river
Chowan Swamp, N.C.	Union Camp Corp.	$600,000	3,800 acres	Blackwater swamp
Hall's Knoll, Georgia	Union Camp Corp.	$115,000	88 acres	Large live oaks; historical site
St. Johns Ledges, Conn.	The Stanley Works	—	144 acres	High, mile-long rock formation on river
Hobe Sound, Florida	Hobe Sound Co.	$1.3 million	500 acres	Endangered manatee & sea turtle habitat

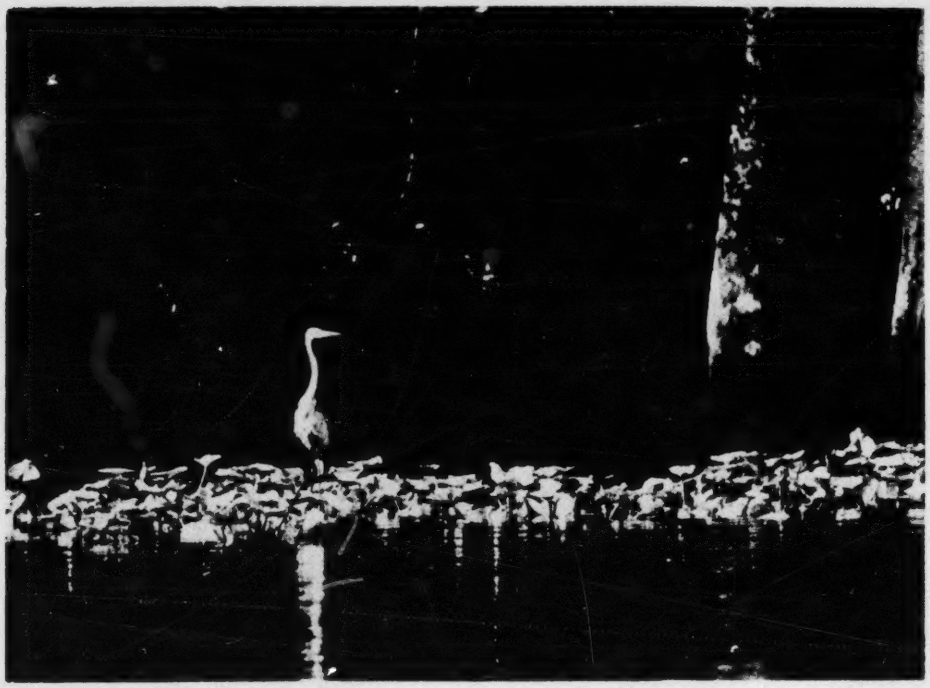
Many other companies and foundations whose names you probably will recognize are supporting the Trust—Travelers Insurance Companies, Aetna Life & Casualty Company, Equitable Life Assurance Society of the U.S., U. S. Steel, Exxon U.S.A., Gulf Oil Foundation, ARCO Foundation, Union Carbide, Rockwell International, Boise Cascade, and the R. K. Mellon Foundation, among others.

We must not overlook major gifts from individuals. Mr. and Mrs. Christian Heurich, Jr., donated 10 islands in the Potomac River north of Washington, D.C. MacLean Marshall, knowing he was terminally ill, gave his beloved and beautiful Marshall Forest in Georgia; he died shortly thereafter. Anonymous donors have sent $3.6 million and $1 million respectively; philanthropist Laurence Rockefeller has contributed, too.

The private sector in this nation—both businesses and individuals—have a responsibility as citizens to protect our most precious natural resource—the land—and to insure that future generations can enjoy its many wonders. The American Land Trust program has given all of us an opportunity to turn our *sense* of responsibility into *action*.

In all, so far, 50 natural areas have already been saved or are on their way to preservation through fund-raising campaigns, thanks to the Trust program—and with particular thanks to many American businesses, to the public, and to that special group, National Council of State Garden Clubs. From its regions to its state federations to its local clubs, Na-

Crescent Lake, Florida, gift of Union Camp to ALT Program.



tional Council's hard-working volunteers are the true lifeblood of the American Land Trust taskforce.

But, at this writing, we are only halfway through this exciting two-year effort. *We have so much more to do!* We are engaged in the greatest private conservation initiative in America's history. Our natural lands are at a crossroads.

MUCH OF WHAT WE SAVE NOW MAY BE ALL THAT WILL BE LEFT. LIFE ITSELF MAY DEPEND UPON IT.

FUND-RAISING PROJECT ANNOUNCEMENTS:

The Importance of Timing

As many who have ever bought a house or property know, real estate negotiations can be very sensitive. Still, the Trust often gets queried, "How can I find out ahead of time what my state's fund-raising project will be?"

For that handful of states still awaiting word on a specific project, we hope you will be patient. The American Land Trust and The Nature Conservancy have learned from experience that premature public discussion often can drive prices up. Both (1) because of the benefits that can accrue to the seller through the Conservancy's IRS-recognized tax exempt status, and (2) because we want to buy the best for our money and buy it economically, we are striving to obtain lands at below fair market value.

Negotiations are still in progress in several states, but we are working to conclude these as quickly as possible. As purchase arrangements are finalized, you will be notified. Please note the new project announcements for Missouri and Massachusetts in this issue, as well as the list in the March-April NATIONAL GARDENER, p. 22.

Stay tuned! And, *yes*, we invite you to earmark your donations for use solely in your state. They will be held in readiness for your project.

THE AMERICAN LAND TRUST AND OPERATION BIG C

The American Land Trust, in an intensive two-year campaign, seeks to preserve vital natural lands, at least one prime area in each state, in cooperation with The Nature Conservancy, a 25-year-old private nonprofit conservation group. Through its "Operation Big C", National Council of State Garden Clubs is actively assisting in achieving the goal.

TO DONATE

To contribute to the American Land Trust effort, please make checks payable to The Nature Conservancy and send to: The American Land Trust, P.O. Box 2076, Arlington, Virginia 22202. Donations are tax-deductible. Please include the name of your garden club.

Donors of $10 or more, be they individuals or clubs, receive a 9" x 12" Honorary Trustee certificate, a special one-year membership in The Nature Conservancy and the quarterly *Nature Conservancy News*.

MORE FUND-RAISING PROJECTS—

MISSOURI	Maple Woods
MASSACHUSETTS	Halfway Pond Island

The National Gardener

Bulletin of the National Council of State Garden Clubs, Inc.

Vol. 48 No. 3
May-June 1977

THE ANNUAL WILDLIFE ESSAY CONTEST

By W. C. KELLNER, Assistant Chief, Education Division

The annual Wildlife Essay Contest is a school conservation project sponsored each year by the Virginia Commission of Game and Inland Fisheries and the Virginia Division of the Izaak Walton League of America. Held annually since 1947, it is proving to be more popular in Virginia schools every year.

The object of the contest is to help make conservation-minded citizens out of Virginia's children. Because the strength of any nation is based upon its natural resources, it is important that all young people understand resource values and the role they play in maintaining America's high standard of living and free way of life.

Though science and technical know-how have progressed rapidly in the past several decades, science will never be a substitute for natural resources. We'll always have to depend on soil, water, plants and animals for a wholesome way of life.

Today thousands of Virginia youngsters have been stimulated to think about the importance of wildlife and related resources as a result of their participation in this contest. This alone points out the value of the contest.

In the past, some interested teachers have taught conservation in the classrooms by integrating the subject with their required courses of study.

Teachers of history, social science, general science, and even arithmetic have acquainted their pupils with natural resources by working the idea of conservation through these courses. Many have seen that every subject taught in the public and private schools has a direct relationship to some conservation concept.

The contest is the natural tool of instruction for teachers. It gives an English teacher, for example, an excellent opportunity to teach wildlife conservation and, at the same time get pupils into the practice of writing and thought development. The knowledge gained in the preparation of essays will make better citizens and sportsmen out of the youngsters.

Each year an estimated 10,000 or more school children, from grades 5 through 12, prepare essays on conservation, or some special aspect of it, depending upon the title. Yearly $1400 in prize money is awarded to the winners in the several categories. A $400 college conservation scholarship is now awarded to the high school senior whose essay is judged best for that grade in the state. Fifty-six other cash awards, totalling $1000, are also given. In addition to these prizes, some 240 beautifully engraved certificates of merit are awarded to students writing good papers but not in the cash categories.

There are eight grand prize winners, one from each of the grades 5-12, each receives a cash award of $50 in ceremonies at the State Capitol in Richmond with the Governor making the presentation in the state Senate Chamber. Other winners get their cash awards in ceremonies at the schools. Second place winners in each of the eight grades receive a $25 prize and third place winners receive a $15 prize. In addition to these placements prizes, there are 16 honorable mention prizes of $10 and 16 special mention prizes of $5 each. There is also a special school prize of $10 awarded to the school having the best response.

A plesant day of entertainment is planned for the grand prize winners and their parents and guests who come to Richmond each spring. An honor luncheon is held for the winners and dignitaries, and important state officials are invited as special guests.

REFERENCE MATERIALS

In the past, information packets have been mailed to all schools sending in official entry cards. As the contest has grown, this has become a staggering undertaking. Due to the expense and the shortage of printed matter, these packets will not longer be used. Information specifically on the contest for principals, teachers and pupils, including announcements, however will continue to be sent out.

All school libraries now have materials that can be used for references in the contest. Over the years the Game Commission has sent our reprints, pamphlets, charts, booklets, including Birdlife of Virginia, Freshwater Fishing and Fishlife in Virginia, and Game Birds, Mammals and Fish of Virginia, that can be referred to by the pupils. Each month, too, a copy of Virginia Wildlife magazine goes to the library of each school in Virginia and is a good source of conservation information. Aside from these Game Commission publications, many school libraries have excellent books on conservation in general that will be of aid to the student who is preparing an essay.

HOW ESSAYS ARE JUDGED

The thousands of essays that are received at the Game Commission offices are separated as to grade at the close of the contest and all the essays are carefully screened by Commission personnel. The best ones are sent to a panel of judges for the final selection of all major prize winners. This board of judges is made up of the president of the Virginia Division of the Izaak Walton League of America, the executive director of the Commission of Game and Inland Fisheries and the state superintendent of Public Instruction.

The judges make their selections based on such things as coverage and understanding of the subject, originality and presentation of thought, effective punctuation, neatness, grammar, etc.

Though essays may be sent in longhand, in many instances neatness and in some cases clarity is gained by having essays typed.

SUGGESTIONS FOR PRINCIPALS

The high school principals can be of great help in this conservation education project by giving it their support. They can bring the announcement and rules of the contest to the attention of the faculty at their regular meetings. In many instances a little encouragement from the principals will go a long way toward helping to establish an interest in the subject. In some schools the principal's interest and guiding hand have been the secret of the success the school has had in past contests.

SUGGESTIONS FOR TEACHERS

Many times the principal is burdened with administrative duties and so has little time to give to the contest. In such instances it is the classroom teacher that arouses the interest and encourages the participation. The teacher that shows interest and enthusiasm will have no difficulty getting 100 percent participation from her pupils.

The Game Commission now has three special services officers on the staff. One duty of these men is to help encourage conservation education in the schools. They will gladly prepare and bring to the interested school groups a program on wildlife conservation. The programs are especially appropriate in introducing the annual Wildlife Essay Contest to a class or a school assembly program. If a principal or teacher is interested in securing such a program service, contact should be made with the educational specialist nearest the school. The men in charge of this work are:

Northern District,
Mr. Max Carpenter
R.F.D. #1
Dayton, Virginia

Western District,
Mr. Joe L. Coggin
Wildlife Unit, Dept. of Biology
V.P.I., Blacksburg, VA.

Eastern District,
Mr. Dan Cantner
Biology Department
College of William & Mary
Williamsburg, VA.

These field men will give valuable suggestions to schools on the essay contest or the teaching of conservation and how to go about it. Their services can be had upon written request.

Education has been defined as training youth for their station in life. Today it is recognized that youth must be trained to appreciate resource values which lie at the foundation of our democracy, or, history is likely to repeat itself in America and we could end up as a have-not nation. Conservation education is fundamental. It is increasingly important. The annual essay contest is one small pathway for learning to understand some of these fundamentals.

From: Virginia Wildlife
September, 1955

OF DEMOCRACY, TRUTH, AND COURAGE---STUDIES OF ENVIRONMENTAL ACTION

Dr. Thomas Tanner, Cispus Environmental Center, Randle, Washington
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College, Ellensburg, Washington 98929; (509)963-3681.

Summary:

Several years' writing and classroom testing have now culminated in the publication of a set of case studies of citizen action, appropriate for use mainly at the high school level. An Instructor's Guide, Student Edition, and packet of illustrative photos are available. These may form the basis for a special one-semester course, or provide supplementary materials in a variety of courses.

Rationale:

Citizen action is necessary to the solution of our nation's environmental problems, local and national, immediate and long-range. Citizen action led to the formation of our national park system, the Environmental Protection Agency, the concept of the environmental impact statement, and other environmental safeguards. Citizen action halted the Miami jetport, certain dams on the Colorado, and similar questionable projects. Citizen groups have facilitated industry or public agencies in such positive steps as Union Camp Corporation's gift to the nation of a 50,000 acre wildlife preserve in the Great Dismal Swamp. In a very real sense, the essence of American participatory democracy is illustrated by local and ad hoc citizen conservation groups, as well as by such national and/or old line organizations as the Nature Conservancy, the National Audubon Society, The Wilderness Society, and others.

Unfortunately, there is much in our culture which conveys the impression that one is doing his duty as a citizen if he merely votes; this myth is strongly implicit in the mass media around election time, for instance. Teachers and the schools are not all prepared to overcome this failure in cultural transmission.

The concept of participatory democracy is nowhere better exemplified than by the work of citizen conservation groups. High school students should have the opportunity to learn about such groups in some detail, both as to their raison d'etre and modus operandi. An obvious vehicle is the case study approach to specific environmental issues. This can be a superior form of environmental education as well as a superior form of citizenship education.

Materials and Methods:

The Student Edition is composed principally of reprinted, non-technical magazine articles. These deal with citizen action on six issues: nuclear power; stream channelization; Glen Canyon Dam and Lake Powell; overgrazing of public lands; agribusiness vs. the family farm; and the preservation of a portion of the Great Dismal Swamp. The articles were chosen on the criteria of readability, comprehensiveness, and literary merit (i.e., humorous, lively, or beautiful prose were chosen.

The Student Edition is printed on Mazer Spirit masters, so that the teacher or his assistant may run off many copies at low cost on any school ditto machine.

The Instructor's Guide consists of several parts. There is a unit guide for each case study. A unit guide typically contains most or all of the following elements: discussion items, with necessary background information; a simple simulation which can be performed only upon the students' having read the reprints; names and addresses for selected free and inexpensive films and other audiovisuals applying to the case; names and addresses for selected printed materials.

The Instructor's Guide concludes with three features which apply to the case studies as a group: a set of overall wrap-up discussion items; an original Planet Planning activity; a selection of magazine reprints which give the teacher additional background information over and above that provided by the reprints of the Student Edition.

The materials are based upon certain assumptions about the teacher's classroom procedures: that most of the students can read non-technical material written at the eleventh or twelfth grade reading level that some work will be done in small discussion groups, in which non-readers can be "carried" somewhat by readers; that both sides of issues will be examined. The reprints tend to be by and about the citizen conservation groups; many of the recommended free materials are from their adversaries.

Although the issues were current as of 1976, they are not meant to be studies of current issues as such. Rather, they illustrate political processes and ethical dilemmas which, it is hoped, will make them as useful in 1984 or 2000 as in 1976.

Availability of Materials:

Of Democracy, Truth, and Courage: Studies of Environmental Action. Contents - Packet of captioned photos. 67-page Student Edition printed on Mazer spirit masters. 76-page Instructor's Guide.

Available for $24.95 postpaid from National Audubon Society, Educational Services Division, 950 Third Avenue, New York, New York 10022.

Funding:

The project was supported by grants from the U.S. Office of Education, the National Audubon Society, and the POINT Foundation.

---Tom Tanner
October 1976

PROJECT I-C-E (INSTRUCTION-CURRICULUM-ENVIRONMENT)

Robert J. Warpinski, Director, 1927 Main Street, Green Bay, Wisconsin
54301; (414)468-7464.

Project I-C-E is a K-12 curriculum and instruction program for environmental education. A framework based on 12 major environmental concept categories provides structure for each grade level and subject area, and totally, K-12, to assist all staff to teach environmentally.

The major goal is to directly or subtly lead students to awareness, appreciation and recognition of the vital issues, concerns, and factors shaping environmental attitudes and values.

The program emphasizes use of the urban and natural community as an extension of and a reinforcement for classroom activities. No special or expensive equipment or facilities are required. The project-developed curriculum guides and model field activity units can be used by random teachers or readily implemented by groups of interested teachers, by a building staff, or a K-12 system without regard for locale or circumstance.

Suggested program learning activities are designed to be integrated into regular (traditional) courses of study by substitution of content or activity, while maintaining traditional skill concerns; hence, it is not viewed as something extra for teachers to do as with additional instructional matter. This is achieved through a supplementary episode (mini-lesson) design that includes the concept, subject area and topic designation and suggests several alternative student/class activities based on cognitive and affective objectives and necessary skills. A further section provides suggested reference and instructional resources for teachers.

Project-developed teacher materials include a series of 39 I-C-E Environmental Education Guides for all grade levels and in all major subject areas except foreign languages. In addition there are over 30 supplementary field activity models. Teachers adapt or modify activities according to local needs and interests. A Media Catalog, project brochure, and a strategy handbook "To Catch a Falling Star" provide teachers with resource reference, program information, and suggested implementation strategies. Several AV programs are basic to staff training; "Head High in Learning" is an overall program approach and "Man Needs His Environment" deals with the 12 I-C-E Environmental Educational Concept Categories.

An experimental evaluation design in 1974-75 showed significant student cognitive gains on the 12 major environmental concepts for sample grades 2, 5, and 8. Grade 11 results were inconclusive with inadequate implementation at that secondary level. Dr. Conrad Katzenmeyer and support staff from the Wisconsin Research and Development Center conducted the evaluation. The results are detailed in a May 31, 1975 document "Final Evaluation Report, Project I-C-E, Green Bay, Wisconsin."

Project I-C-E was funded under ESEA Title III, administered by the Wisconsin Department of Public Instruction. Following a planning grant in 1969, the project became operational in July 1970 and served a multidistrict region in Northeastern Wisconsin until June 1975. With the ending of such state Title III funds, I-C-E continues to serve the area through a self-supporting RMC for environmental media and through sale of the curriculum guides nationally and internationally.

Since July 1975, the I-C-E program has been funded for national dissemination under the auspices of the USOE-supported National Diffusion Network following approval by the OE-NIE Joint Dissemination Review Panel in May 1975. Awareness and adoption programs span the nation: Washington, Oregon, Texas, Oklahoma, Missouri, Iowa, Nebraska, Minnesota, Illinois, Indiana, Ohio, Kentucky, New Hampshire, Vermont, and Connecticut, and non-project area districts in Wisconsin. Under the Special Projects category in the U.S. Office of Education budget, there is provision for continuation of the National Diffusion Network, hence similar I-C-E dissemination activities for 1977-1978.

---Robert J. Warpinski
October 1976

SCHOOL FOREST CAMP

Hugh Curtis, Coordinator; Outdoor Education and School Forest, Wausau District Public Schools, 407 Grant Street, Wausau, Wisconsin 54401; (715)845-5279.

The School District of Wausau maintains a resident Environmental Education Center, frequently called School Forest Camp, for students of this school district. All fifth grade students spend two and one-half days at the Center during the winter months. All sixth grade students spend a full week there, either in the fall or the spring. The use by other groups is voluntary and does not include all classes in the school district.

Our purpose is to utilize this facility to enable teachers to teach their normal assigned areas of instruction, but do it in a more effective manner. The experience at the School Forest Camp is directly related to their regular classroom activities. Obviously, there are many social and environmental gains for the individual students, in addition to their classroom instructional areas.

Our funding has been entirely local. Federal grants have not been received for this project. The land (500 acres) and the materials for the twenty buildings were obtained through student activities, donations, and the sale of pulpwood. No tax monies were used to obtain these facilities.

Our curriculum materials were developed for our local use and may not be of great assistance to others. They include: Camp Director's Manual; Classroom Environmental Activities for K-3; Self-Guided Nature Trail Booklets; and a Manual for High School Counselors. A brief brochure has also been produced.

---Hugh Curtis
October 1976